Peactical Navigation;

OR AN

Introduction to the Whole Art.

CONTAINING

The Doctrine of Plain and Spherical Triangles. Plain, Mercator, Great Circle Sailing; and Astronomical Problems. The Use of divers Instruments; as also of the Plain Chart, Mercator's Ghart, and both Globes. Sundry Useful Tables in Navigation: And a Table of 10000 Logarithms, and of the Logarithm Sines, Tangents, and Secants.

By John Seller, Hydrographer to the King.

LONDON

Printed for R. and W. Mount and T. Page, in Postern-Row, on Tower-Hill, MDCG. I.

The gift of mm. The.

Navigation, Printed for Richard Mount. Couling Prior for England, Scotland, Ireland, Holland, Flanders, dec. Roul in Place for the Channel. English Pilot for the Northern-Sea.

The Pilot for the Straights. The Eng. Pilot for the West-Indies;

The Lor for the East-Indies. Eng. Pilot for Africa and Guinea. fariners Magazine, containing the Art of Navigation, Surveying, Gauging, Gunnery, tronomy, Dyalling, and Fortification, By Capt. Samuel Sturmy, Folio. Atlas, containing Charts of the Sea-Goafts of the whole World. The Mariners New Kalendar. By Nathaniel Colfon.

The Seaman's Kalendar. By Henry Philips. The Seaman's New Kalendar. By William Leybourne.

The Scaman's Practice. By Richard Norwood.

The Ship Builders Affistant, By N. Southerland, Ship-wright. Normond's Doctrine of Triangles, applied to Navigation.

Practical Navigation, By John Seller.

The whole Art of Navigation. By Capt. Daniel Newboufe.

The Theory of Navigation By Ja. Hodgon.

A Light to the Art of Gunnery, By Capt. Thomas Binning. The Safeguard of Sailors; describing the Sea-Coasts.

Accomplished Ship-wright and Mariner. By 7. Hardingbam.

The Compleat Modelift, or Art of Rigging; shewing how to raise the Model of any Ship : and to find the length and bigness of every Rope in all Veffels, with the weight of their Anchors and Cables. By Thomas Miller.

The Boatswain's Art: shewing the Art of Rigging any Ship, &c.

The Complear Ship-wright; reaching the Proportions used by Ship-wrights, according to their Custom of Building; with the drawing of a Draught, the making and marking of a Bend of Moulds, with a Table of Squares. By Edm. Buffmel, Shipwright.

The Geometrical Seaman, Thewing the 3 kinds of Sailing. By H. Phillips.

The Seaman's Glass, thewing the use of the Plain Scale in Navigation,

Seamans Grammer. By Capt. John Smith.

Sea Dialogues, and a Dictionary, explaining all the parts of a Ship, with the words of Art and Phrases used at Sea. By Capt, Smith.

An Epitome of the whole Art of Navigation, By James Atkinson.

Epitomy of Navigation, shewing the Dollrine of Triangles and all three Kinds of Sailing ; Aftronomy and Geography, with useful Tables in Navigation, By H. Gellibrand,

Norwood's Epitomy, of Navigation. With Additions, by J. Athinfon. Mariners Compais Rectified, By A. Wakely, enlarged. By J. Atkinfon.

The Art of Defensive Sea-Fighting. By Robert Parke.

The use of the double Scale of Proportion. By Seth Partridge.

A Key to Arithmetick, and Algebra. By 7. Parsons.

he Seaman's Tutor. By Peter Perkins.

athematical Manuel of Navigation, Gunnery, Dyalling, &c. By H. Phillips.

The Rule of Proportion explained in Navigation, &c. By E. Wingate.

Arithmetical Trigonometry, with the Construction or Making the Tables of Logarithms. Sines and Tangents. By Mark Forfter.

uare and Cube Root compleated. By Peter Halliman.

nere are also sold all forts of Mathematical and Sea-Books, in English, Sea-Charts for all parts of the World; or Books of any other Subjects; all fores of Paper, or Paper-Books; the best lak, and all other Stationary Ware, at Reasonable Rates.

THE

PREFACE

To all COMMANDERS of Ships, and all other Officers and Mariners of our English Nation.

GENTLEMEN,

HE kind Acceptance of this Treatife amongst you, hath encouraged the Continuation thereof unto many Impressions, it
having had the Countenance and Assistance of an able Mathematician, in several Impressions, to render it the more compleat and useful: sinding a general Approbation of all that
Correction of several Errors, that have escaped in the sorner Impressions; and several Tables removed forward that were expired. So hoping
for as good success in this, as in the former Impression to the candid Censure of the Judicious, and rest.

Yours to ferve you, loss of shall

FOHN SELLER

Men a finish press Dolong a

IN Prescot-Street in Goodman's-fields, are taught these Mathematical Sciences: Viz. Arithmetick, Geometry, Algebra, Trigonometry, and Gunnery, likewise the Use of the Globes, and other Mathematical Instruments, the Projection of the Sphere, and other Parts of the Mathematicks

By JOHN COLSON

On the I'rallical Navigation of my very good Friend the Author.

Our Book (kind Sir) I have penus'd and find Rich Arguments of an Ingenious Mind; That for our good your Talent will not hide. But build a Light-House Mariners to guide. What others have in mighty Volumes done; You neatly here have concluded all in one: Yet is your Book to no great Volume grown, Though grac'd with learn'd Additions of your own. For me to praife your Work, might be my blame, Fearing my Meanels might dispraise the same: You want not learned Pens, in lofty Verse. Your well-deserved Praises to rehearse. Mean Artists, Men Obseure (and such am I) Ought t'wish and pray for your Prosperity. Yet rouse for (once) my humble Muse, and let The Country Oat-Pipe drown the Flajelet; And 'tis but fitting (fith your pains in this To City and to Country useful is) That City Poetry and Country Lavs With joint Confent should eccho forth your Praise. Who doth peruse your Work, shall furely find, The Subject handled well, and well delign'd.
You much have done in little: Here we find, What in this Art may please a curious Mind. The Longitude excepted: But if we Your Rules observe, obtained it may be For use sufficient; but the same to get, With certainty, is not discovered yet. Which rare Performance, if that any can Make plainly out, I wish you be the Man. But flay, my Mule, be short and not so rude; I'll only with you well, and fo conclude. May these your Labours (as they profit all) Turn to your profit, and your good withal. May no base Plagiary arrogate That to himself, which you by pains have got. May never English-man be so unkind. ed (As famous * Wright, and reverend + Ward do find) Pascribe to Strangers, what you have set forth, Detracting to from their and your true Worth. in May you encouraged be as reason is, To publish more fuch useful Works as this May you be happy ever inthe End. Thus prays your humble Servant and your Friend.

Westerleigh in

Nathaniel Friend.

A TABLE of Contents of the following Treatile.

	Navigation) Page
CHAP. II. Containing Sundry useful De Sect. 1. Geometrical Definitions. Sect. 2. Geometrical Problems.	efinition). name transmission of the contract
CHAP. III. Treateth of the Dollrine of Sect. 1. Containing some things necessary Trigonometry. Sect. 2. Of Right-Angled Plain-Triangles. Sect. 3. Of Oblique Plain-Triangles.	to be understood in the Science of Plain
CHAP. IV. Containing the Dollrine of Sect. 1. Of the Affellious of Spherical Triang Sect. 2. Of Right-Angled Spherical Triang Sect. 3. Of Oblique-Angled Spherical Triang	less and their Axioms 29
CHAP. V. The Dollrine of Plain Trien Sect. 1. The Explication of Right-Angled Sect. 2. The Dollrine of Oblique Triangles	Lysangles:
CHAP. VI. The Dottrine of Plain Rig	be Angled Triangles, applied in Problems
CHAP. VII. The Dostrine of the Sp of Great Circle Sailing.	berical Triangles, applied in Problems 61
CHAP. VIII. The Dollring of the Sph blems, useful in the Art of Navi Sect. 1. Of Astronomical Definitions. Sect. 2. Of Astronomical Problems. Sect. 3. Containing some general Astronomical Verse of Mr. Epair, &c.	igation}

CHAP. IX.

A DESCRIPTION OF COURSE OF STREET, OF STREET	
Sect. 1. The Original, Discovery, and Invention of the Mariners Compass,	- AAA BEEN SON
the Excellency thereof.	102
Sect. 2. A discourse of the Variation of the Compass, and the Natural Cause	
Sect. 3. The Description and Use of the Azimuth Compass.	115
Sect. 4. The Description and Use of the Universal Ring-Dial.	113
	117
CHAP. X.	209
Sect. 1. The Description and Use of the Cross-Staff.	119
Sect. 2. The Description and Use of the Quadrant.	124
Sect. 3. Rules for finding the Latitude by Observation.	127
Sect. 4. The Description and Use of the Notturnal.	130
CHAP. XI.	10
Sect. 1. The Description of the Plain Scale.	15,47
Sect. 2. The Use of Gunter's Scale.	135
Sect. 3. The Description and Use of the Sinical-Quadrant.	153
Sect. 4. The Description and Use of the Plain-Chart.	177
Sect. 5. The Description and Of of Mercator's Chare.	187
Sect. 6. The Description and Use of both Globes.	1190
Sect. 7. Containing some secret Properties of the Load-Stone.	199
Hereunto are annexed several useful Tables.	
	W.
A Table of the Moon's Age	206
A large Tide-Table. A Table of the True Time of High-Water at London-Bridge.	212
A Table of the Sun's Right-Ascension.	211
A Table of the Right-Ascension and Declination of Some of the Principal	220
Stars.	and the state of
A large Table of Latitudes and Longitudes of Places.	222
A Table of Meridional Parts, to corry Degree and Minute.	231
Tables of the Sun's Place and Declination, with a ufeful Kalendar.	238
Adarge Traversa-Table, Shewing the Latiende and Departure for every Quarter-	Point'
of the Compuss, and to any Distance, not exceeding 10000 Mi	les or
Leagues	200 min
Their Use in Navigation, especially in a Traverse, and in a Sea-Reckonis Journal.	1g or 262
The manuar of keeping a Journal at Sea.	266
# Table of ten Thousand Logarishms.	273
A Table of Logarithmical Sines, Tangents, and Secants, immediately follo	wing
the Said Table of Lugarithms.	
The Use of the Tables.	13.0
Dean South of the state of the	ical

Peactical Navigation!

CHAP. I.

A Preliminary Discourse of Navigation and Arithmetick.

SECT. I. Of the Preliminary Discourse of Navigation.

AVIGATION (that useful part of the Mathematicks) is a Science which has been highly valued by the Ancients, especially by our Ancestors of this Island; it being indeed the Beauty and Bulwark of England, the Wall and Wealth of Britain, and the Bridge that joins it to the Universe.

It consists of two general Parts.

First, That which may be called the Domestick, or more common Navigation, (I mean Coasting or Sailing along the Shore.) This part employs the Mariners Compass and Lead, as the chief Instruments; and for an Introduction of this kind, I refer you to the Books, entituled, The English Pilot, describing the Sea-Coasts, Capes, Soundings, Sands, Rocks, and Dangers; the Bays, Roads, Harbours, Rivers, and Ports, in most of the known Parts of the World: Being furnished with New and Exact Draughts and Defcriptions, collected from the Experience of divers of our Able Navigators; Sold by Mr. Mount on Tower-Hill

Secondly, That which may more properly bear the Name and principally deserves to be entituled the Art of Navigation, is that part which guides the Ship in her Course through the Immense Ocean, to any part of the known World; which cannot be done unless it be determined in what place the Ship is at all times, both in respect of Latitude and Longitude; this being the principal Care of a Navigator, and the Mafter-

piece of Nautical Science.

To the Commendable Accomplishment of which knowledge, these four things are subordinate Requisites:

Seometry, another another backet Viz. Scometry, and and as elder side to said fiel edt

Che Doarine of the Spheres and wot a sille.

Of the first of which (namely Arithmetick) I shall give you a brief

Specimen.

Arithmetick is the Art of Numbering, from the Greek Word Arithmos, which fignifies Number; and in it there are five especial Parts, viz. Numberation, Addition, Subtraction, Multiplication, and Division. Of which in order.

SECT. II. OF NUMERATION.

Umeration teaches how to fet down any Number spoken or proposed; and to read it truly when written.

To which purpose you are to observe, That Numbers are commonly

expressed by these Nine Figures.

One, Two, Three, Four, Five, Six, Seven, Eight, Nine.

And o which is called a Cypher, (and by some a Nonght) because of it self it signifies nothing, yet encreases the Value of other Figures that stand behind it; for every Figure augments its proper Value according to the place it happens in, except the first: And are reckoned from the right-hand unto the lest (and the reason is, because this Art of Numbering was first taught by the Oriental Nations, whose Languages are read that way) so that the Figure that stands farthest to the right-hand is said to be in the first place, the next to that to be in the second place, and so of the rest.

Any of the nine Figures in the first place signifies only its single Value; in the second place, as many Tens as its own simple Value; in the third place, so many Hundreds, in the fourth place, so many Thousands; in the fifth place, so many ten Thousands; in the fixth place, so many Hundred Thousands; and in the seventh place, so many Millions; as

may appear in this following Table.

The last Line of this Table is thus read, One bundred twenty three Millions, four bundred fifty his thousand, seven bundred eighty nine.

SECT. III. OF AD DITION.

A Ddition is the putting together of two or more Numbers into one Sum, so that the total Value of them all may be discovered.

Example 1. In whole Numbers.

Suppose there were a Squadron of Men of War of five Ships, I demand (according to the quantity of Men in each Ship) how many Men there is in the whole Squadran?

Aboard of the biggest Ship there are	natworker to tell a pd. as-tiered
Aboard another,	
Aboard another,	278
Aboard the laft,	HILL THE WAR THE LIO

There are in the Squadron

To Add these together, begin at the first Row on the Right-hand, and say 8 and 2 is 10, set down a under the first; then I carry the 1 (which stands for 10) to the next Row, and say 1 and 1 is 2, and 7 is 9, and 6 is 15, and 5 is 20; then set down a under the second Row, and carry the 2, which is 20, to the next Row, and say 2 and 1 is 3, and 2 is 5, and 3 is 8, and 4 is 12, and 5 is 17; which 17 set down under the third Row, and the Sum is 1700, the Number of Men in the whole Squadron.

Example 2. Of Pounds, Shillings, Pence.

Now if you would know how much Money all the Captains Pay

Supposing that the Capta	od upum po	P. Callett	mb marm	I za fooil	4
The Captain of the othe	r Ship-		•	8-10-	00
The Captain of the othe		ed amb çı	-0	7-10-	BANKS OF THE PARTY
The Captain of the othe The Captain of the last-	id multi- ist	anol to t	第二条 据准国籍的人称 人工	5-20-	CO
mineral cure maconina no ma ma de la del	ment of the	Mark Land		The second secon	90

The Question is How much Money it amounts to

To effect which you must begin at the Row of Pence, and seeing there is no Pence in the whole Row, you must set down oo under the Row of Pence. Then proceed to the Row of Shillings, and add no the Shillings in that Row, which amounts to 30 Shillings; set down the to Shillings under the Row of Shillings, and carry the 20 Shillings, of one Pound, to the Row of Pounds, and say 1 and 5 is 6, and 6 is 12, and 7 is 19, and 8 is 27, and 10 is 37, which 37 fet down under the Row of Pounds, and the whole Sum amounts to Thirty seven Pounds, Ten Shillings, the Sum of all the Captains Pay for one Month.

B 2

CHAP

SECT. IV. OF SUBTRACTION.

Subtraction (commonly called Subfraction) is a Rule that teaches how to take any lesser Number out of a greater, so as to know how much remains.

1. Set down your greater Number, and under that your smaller, Unites under Unites, Tens under Tens, &c. and in Money each Denomination answering to its kind, as Pence under Pence, Shillings under Shillings, and Pounds under Pounds.

2. Draw a Line under them, and begin at the Right-hand, and take the lesser Number out of the greater, and set down what remains under

the Line.

3. If any Figure of the smaller Number happen to be bigger than that over it, then you must borrow a Unite from the next Place, or higher Denomination, to be added to the lesser Figure, subtracting from that Sum, and subscribe the Remainder; which Unite must be added to the next place, or Denomination to be Subtracted; as will appear in the Example following.

	Example.	SHIT US LOS	1. 31 s. c d.
Suppose I borrow			-296-15-06
And I paid at feveral T	imes——		
There remains due -			

The Work is thus performed: Begin with the Row of Pence, and say 4 from 6 and there remains 2; then go to the Row of Shillings, and say 17 from 15 I cannot take, then you must borrow 20 Shillings from the Row of Pounds; and say 17 from 35, and there remains 18, which 18 fet under the Row of Shillings: Then proceed to the Row of Pounds, and say 1 that I borrowed and 5 is 6, 6 from 6 there remains 0, which o set under the first Row of Pounds; and proceed to the next, and say, 2 from 9 and there remains 7; which 7 set under the second Row, and proceed to the third Row, and say 1 from 2 and there remains 1; then is the Question sinished, and there remains 1701. 18s. 2d. unpaid.

And the Onestion		Line s. d.
Now to prove when	ther the Question is	truly 296-15-06
	Remainder and the	MANAGER WATER TO STATE OF THE PARTY OF THE P
	and if the total of that with the upper Nur	There was a supplemental of the supplemental o
then is the Work	ight.	296-15-06

Some of the Capains Ray for out the joines.

SECT. V. Of MULTIPLICATION.

Williplication teaches how to encrease the greater of two Numbers given, as often as there are Unites in the leffer; and ferves instead of many Additions.

2. In Multiplication there are three Parts.

Before you can make any

by Heart.

avi in a l

1. The Multiplicand, or Number to be Multiplied.

2. The Multiplier, or Number by which it is Multiplied.

3. The Product made by the Multiplication.

		Example.			Multiplicand Multiplier.	
-Fore w	on can make a	ny Progress in t	his Rule	1584	alquhild ui	1
you m	ust perfectly	get the followi	ng Table	25344	Product.	The second second

Multiplication Table.

one and a bare	- 7	-	1000		12791	14.00		19.50	1 0	100 mg	and traductions
Total of the g	300	10	_2	_3	14	5	-0	1	-8	9	steered Proofs
	I	1	2	3	14	5	6	_7	8	9	airlage way
Date of the Control of the	2	2	4	6	8	10	12	14	16	18	ar est coun
A 10 10 10 10 10 10 10 10 10 10 10 10 10	2	3	6	9	12	15	18	21	24	27	har thinke the
2344 69	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9	-8	12	16	20	24	28	32	9 9 18 27 36 45 54 63 72 81	s rott sor s
32 468 9	4	4	-		1	-	4	20	-	30	
324689	5	5	10	15	20	25	30	35	40	45	RESTRICT SE
5-19219	16	6	12	18	24	30	36	42	48	54	ent who stable
01212	7	7	14	21	28	35	42	49	56	63	. To be decimined
121020	8	8	16	24	22	40	48	-K	64	72	
2 0000	-	-	= 0	=	34	1		=	4	14	
7 7	9	9	18	3 6 9 12 15 18 21 24 27	36	45	54	03	72	81	

The Use of the foregoing Table.

Note; That on the Top and left Side are placed the 9 Digits, which are to be multiplied one by another; and in the common Angle of meeting, you will have the Product.

Example. Suppose I would multiply 7 times 9; look on the left fide of the Table for 7, and on the Top of the Table for 9, and in the Angle of meeting (in the Column next the right hand) you will find 63, the Answer of the Question. Edg Quedien is the Sum produces, by Laurini

dished the real in the Diridend And It day they have no render

11 12 11 201 201 27

aidz no whom a est con now william esta COTT TOT BUS

MARCH CORE or view that Pictonium1

rad but vin lach nevier siven.

Question 1.

Suppose there are 1700 private Seamen in a Squadron of Ships, and they have 23 Shillings per Month, How much Money will pay them for one Month? Set your Numbers thus, the greater Number uppermost.

1700 Multiplicand:

23 Multiplier.

5100 3400

39100 Shillings; the answer of the Question.

and the Multiplier, or Names by

The Numbers being plac'd as is before directed, begin thus, and fay, 3 times o is o, fet that under the 3, and proceed to the next Figure in the Multiplicand, and fay again, 3 times o is o; then fet that o under the 2, and proceed to the next, and fay, 3 times 7 is 21; fet down the 1 under the 7, and bear 2 in mind, and proceed to the next Figure in the Multiplicand, and fay, 3 times 1 is 3, and 2 that I carry is 5, fet that down under the 1; then have you done with the first Product: Then go to the next Figure in the Multiplier, and proceed as you did before, and the fecond Product will be 3400, which must be fer down under the other, only with this Caution, to move it one place more to the left hand, as you may fee in the Work; then add those two Numbers together, and the Product will be 39100, which are Shillings, the whole Sum of Wages for 1700 Men for one Month.

In 235 Degrees, how many Minutes?

Multiply the Degrees by 605 the

Number of Minutes in one Degree.

60

-14100 Minutes.

Note, For a Contraction in this Rule, if any Number is given to be multiplied by 10, 100, or 1000, it is but adding to many Cyphers to the Number given, and that will be the Product. As thus,

If 232 be multiplied by 10, it will produce 2320, by 100, 23200;

by 1000, it will be 232000, &c.

SECT. VI. Of DIVISION.

Division teacheth to find how many times a leffer number is contained in a greater, and sheweth what remains simplying the use of many Subtractions. It consists of three parts, Dividend, Divisor and Quotient. The Dividend is the Number to be divided. The Divisor is the Number to divide by, which is always lesser than the Dividend. The Quotient is the Sum produced, by shewing how many times the Divisor is contained in the Dividend. And if any thing happen to remain, it is called the Remainder.

Example 1.

Dividend: in a last 1 de ent la company com Anne and Anne com Anne and Anne com Anne and Anne Divisor 4)24 62 Quotient of the moisting of the

2 Remainder.

Suppose 4684 1, is to be divided amongst 54 Men: How much will

tu enter ell ed Bubors och it

each Man's Share come to?

Set your Numbers in order as you fee in the following Work, (which is the easiest way of Division in my Opinion) to prevent scratching of the Figures, and it will stand thus.

Example 2. 100 and Dividend. /. Divisor 54 \4684/86 Quotient.

433 Cale and thing box hard 324

54 800/14

set the some of the 364 14 1 1 1 1 1 1 1 1 1 1 1 1 1

> The Shillings in one Pound, to reduce the Remainder into Shillings.

faires the Terrise of the Terrise of the 11-032 the Terrise of the 11-032 the Terrise of the 11-032 the to know is no really converse an an

on mult be veroughe by the David Rule, or the Re-The Pence in a Shilling, to reduce the Remainder into Pence.

actismere. So in this Qualition:

Manifest they the third Term is more than the first and they

Hogel sive . Interest for a Year, White 1827 42 which in the cost is less than year and require 384 arerett. I here.

both thelk, and all fuch like Quellions, minus be wrong us by the . ad y or half : 20th vinis of The Farthings in a Penny, to reduce it into ited matter of de di Farthings vid ada your denut be son

The Function Wang cold Book What will ar88 uns collection

the freeze Number fought. As in the arth of 837 (42 amples A

morte the coa which they still se sime

So that if 4684 l. is to be divided amongst 54 men, there is coming to each man's share 86 l. 14 s. 9 d. 3 qs. as doth appear by the Work.

Note, That the best proof of Division is by Multiplication, thus: Multiply the Quotient by the Divisor, and add the Remainder (if any be;) and if the Product be the same with the Dividend, then is the Work right, otherwise there is some Mistake.

SECT. VII. Of the Rule of THREE.

THE Rule of Three, for its excellent Use is called the Golden Rule, which teaches from three Numbers given, to find a fourth in proportion thereunto, which is done by multiplying the second and third Numbers together, and dividing the Product by the first, and the Quotient of the said Division is the Answer of the Question.

As if 25 Tuns of Wine cost 800% What shall 35 cost?

Here Note; That the first Number and the third must always be of the same Denomination. As if one be Pounds, Pence, Yards. Tuns, Hours, Men, &c. so respectively must the other be: And the like is to be understood by the second and the fourth, as in the following Numbers, which are thus disposed.

Tuns,		Pounds	1004	Tuns
DOMOS	STIO HIS	gallent s	1.7	-02
25	7 - 11 7	800-		35

This Rule is performed (after an apt disposal of the Terms) by Multiplication and Division. But note that this Rule hath two Varieties, viz. Direct and Reverse. Now for the proper disposing the Terms in any Question propounded, it is necessary to give a General Rule to know whether the Question must be wrought by the Direct Rule, or the Reverse; which is this: When in the Question more requires more, or less requires less. As in this Question:

If 25 Tuns of Wine cost 800%. What will 35 Tuns cost? Here it is evident that the third Term is more than the first, and therefore re-

quires more. So in this Question:

to reduce the

If 7501. give 451. Interest for a Year, What shall 501. give? Here it's plain that 501. is less than 7501. and requires less Interest. Therefore both these, and all such like Questions, must be wrought by the Rule of Three Direct, wherein the Rule is plainly thus: Multiply the second Number by the third, and divide by the first, the Quotient shall be the fourth Number sought. As in the first of these Examples Multiply 800 by 35, and the Product is 28000; which being divided by 25, he Quotient is 11201. which shews that 35 Tuns will cost 11201.

of the Rule of Three

The Operation.

And so in the second Example: Multiply 50 by 45, it makes 2250 which divided by 750, the Quotient is 3; which shews that the Interest of 50l. for a Year is 3l.

The Operation.

The Rule of Three Reverse, is to used when in the third Number more requires less, or less requires more; and then the Rule is thus:

Multiply the first Number by the second, and divide the Product by the third, the Quotient shall be the fourth Number sought, which always (as in the Direct Rule) shall be of the same Denomination with the second Number. For Instance,

If 24 Pioneers require 16 Months to dig a Retrenchment about a Town, How many Pioneers must there be employed to dig the like

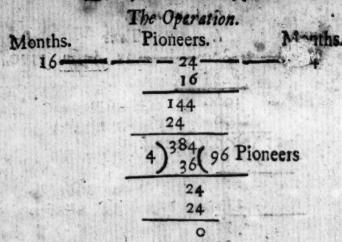
Trench in 4 Months?

In stating this Question you must note, That 24, the it be the first named, is not to be the first Number in the Work, because the middle Term must always be of the same Denomination with that which is sought. And the three Numbers put in order stands thus.

Months Pioneers W. Months of The Y en

Here 'tis plain less requires more, that is, less Time more Hands: Therefore it must be wrought by the Rule Reverse, and accordingly you may Multiply 24 by 16, and divide the Product by 4, the Quotient is 96; as doth appear by the Work: which is, that 96 Pioneers must be amployed to finish the Trench in 4 Months.

Di the Bule Chree.



SECT. VIII.

Some Questions answered, and the Way of working them directed, serving to illustrate the foregoing Rule.

In ADDITION.

Quest. An antient Lady being demanded, how old she was: To avoid a direct Answer, said thus, I have 9 Children, and there were three Years between the Birth of every one of them, my Eldest was born when I was 19 Years old, which is now exactly the Age of my Youngest, How old now, is the Lady?

Answ. It is resolved by Addition thus: First, Set down her Age when her first Child was born, which was 19, then the Difference between that and the Birth of her Youngest which is 24, and then the Age of the Youngest 19, which being added together, shews the Lady to be 62

Years of Age.

19 Her Age.

24 Difference between the Children

19 Age of her Youngest.

62 Lady's Age.

In SUBTRACTION.

Quest. In the Year of our Lord 1588, was the Spanish Invasion; In the Year 1706, I demand how long it is since?

Anfw. Subtract 1588 out of 1706, there remains 118, the Time fince,

to the Year 1706.

In MULTIPLICATION.

Quest. How many Statute Miles are there in the Circumference of the Body of the Earth, whose Circuit is 360 degrees, and each degree contains (according to Vulgar Computation) 80 Miles.

Anfo.

Answ. Multiply 360, by 60, (the Miles contained in one degree) and the Product is 27600 Statute Miles.

The Operation.

360

21600

In DIVISION.

Quest. If the circuit of the Terrestrial Globe is 21600 Miles.

Suppose a Man travel continually in a direct Line (under one of the Greater Circles of the Sphere) 15 Miles a day: In how many days can he compass it?

Answ. Divide 21600 by 15, your Quotient will be 1440, which shews that in so many days he may effect it, that is, in somewhat less than 4 Years.

The Operation.

Containing fund of EO 1600 Lens

Sect. I. Geom Gient Tellining

Point is that will Bull to display of the Per Per nor

Quest. A Man lent me 400 L for 7 Months, without Interest: How much must I lend for 12 Months to retaliate his Kindness?

Answ. This must be folved by the Reverse Rule of Three, and must be thus stated with the district of the Reverse Rule of Three, and must be thus stated with the rest of the Reverse Rule of Three, and must be thus stated with the rest of the Reverse Rule of Three, and must be thus stated with the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three, and must be the rest of the Reverse Rule of Three R

Months: Ass Christing Months.

Where 'tis plain that more requires less; that is, the the third Number be more than the first, yet it requires a lesser Number to answer unto it than the second: Therefore you must multiply 400 by 7, and it makes 2800, which I divide by 12 (the third Number) the Quotient is 233 L and 4 L remaining, the 12th part of which is 6 5. 8 L. So the Answer to the Question is, That I must lend him 233 L 6 5. 8 L. for 12 Months.

4 Which being reduced by 20, the Shillings in one Pound, and it is 80 Shillings; which being divided by 12, produceth 6 s. and 8 Remaining which is 4, of a Shilling, or 8 Pence.

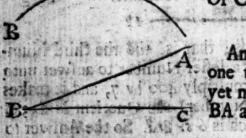
CHAP. II.

Containing fundry useful Definitions and Problems of GEOMETRY

Geometrical Definitions. SECT. I.

Point is that which cannot be divided, having neither Part nor Quantity, and therefore void of Length. Breadth or Depth; and is represented in the Margin, by the Letter A;

> A Line is Length, without Breadth or Thickness, and is Right, as A; Or Curved, as B.



An Angle is the Inclination of two Lines one to another, the one touching the other yet not fo as to make one Line; as the Lines BA and BC.

A Right-lin'd Angle, is that which is contained by Right Lines, as the Angle ABC. Right-lin'd Angle, is either Right-Angled, or Oblique

A Right Angle is when a Right Line, standing upon a Right Line, makes the Angles on each fide equal to each other; as the Right-Angles ACD, and BCD.

An Oblique-Angle is either Acute or Obtuse.

An Acute-Angle is less than a Right, as the Angle DEB.

An Obtuse-Angle is greater than a Right-Angle, as AEB.

A Plain Figure is contained under one Term, or many.

A Circle is a Plain Figure contained under one Term or Line, called the Circumference, unto which all Lines drawn from a certain Point within the Figure are equal, and that Point is called the Center, as A.

A Right-lin'd Figure is contained by Right-Lines, and is either three-fided, four-fided, or many-fided.

A Triangle is a three-fided Figure, and is confidered either in respect of it's Sides, or Angles.

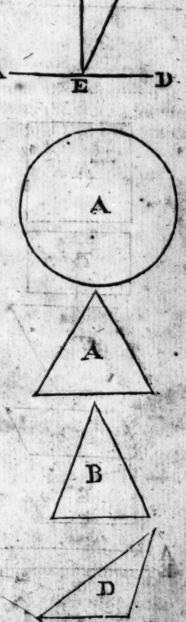
In respect of its Sides, 'tis either, Equilateral, having three equal Sides: as A.

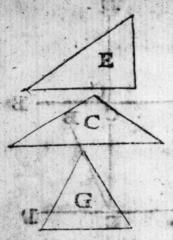
hearts acount but is contact open fired

Or Equicrural, having two equal Sides; as B.

Pastel, es equi defant Night Lines are fuch, which he be no in the Lime Superfeies, it inanitely produced swould surfe most, as

Or Scalenum, having three unequal Sides as D.

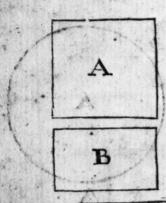




In respect of its Angle, 'tis either,
Right-Angled, which hath a Right-Angle;
as E.

Or Oblique Angled, which hath no Right Angle, but hath two Acute Angles, and one Obtuse Angle; as C.

Or three Acute-Angles; as G.



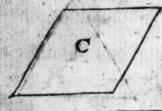
Of four-fided Figures.

A Phin Eigenwest contained pader and Term.

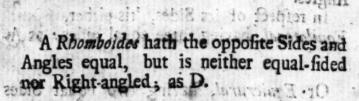
An Scate degle is less than a fill

A Square is that which hath four equal Sides, and four Right Angles, as A.

An Oblang hath four Right Angles, and the opposite Sides equal; as B.



Rhombus hath four equal Sides, but is



All other four-fided Figures are called Trapezia's, as E.

Parallel, or equi-diftant Right-Lines are such, which being in the same Superficies, if infinitely produced, would never meet, as A and B.

E

SECT. II. Deometrical Broblems.

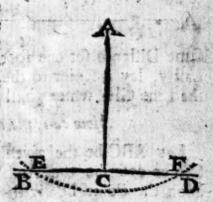
How to raise a Perpendicular on the middle of a given Line.

ET the given Line be AB, and C be a Point therein, whereon it is required to raise a Perpendicular. First, open the Compasses to any convenient distance, and setting one foot in the point C, with the other fet off on either fide thereof the equal distances, CA and CB: Then opening the Compasses to any convenient (wider) distance, setting one foot A in the point A, with the other strike the occult Arch at F, then with the

same distance set one foot in the point B, and with the other draw the Arch E, croffing F in the point D, from whence draw the Line DC, which Line is a Perpendicular unto the given Line AB, as was required.

To let fall a Perpendicular from a Point assigned, to the Middle of a given Line.

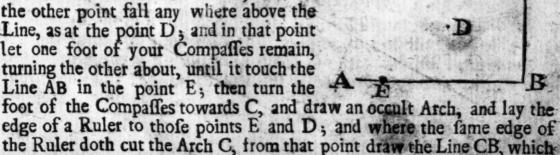
Let BCD be the given Line, and A the point affigned, from whence you would have a Perpendicular let fall: First, set one foot of your Compasses in the Point A, and opening them to any convenient distance, describe an Arch of a Circle that may cut the Line BCD at E and F; then find the Middle between these, which will be the Point C, from which point draw the Line AC, which is the Perpendicular Line required.



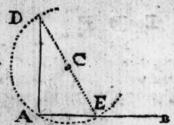
To raise a Perpendicular upon the End of a Line given.

shall be a Perpendicular at the end of the Line AB, as was required. To

Let the given Line be AB; First, open your Compasses to a convenient distance, and fet one foot in the Point B, and let the other point fall any where above the Line, as at the point D; and in that point let one foot of your Compasses remain, turning the other about, until it touch the Line AB in the point E; then turn the



To let fall a Perpendicular from a Point assigned, unto the End of a given Line.



Let the Line AB be given, unto which it is required to let fall a Perpendicular from the Point D, unto the end A. First, from the Point D draw a Line unto any part of the given Line AB, which may be the Line DCE; find the Middle of the Line, which is at C, place one foot of your

Compasses in that Point, and extend the other unto D or E, with which Distance describe the Semi-Circle D A E, which shall cut the given Line AB in the Point A, from which Point draw the Line DA, which is the Perpendicular, on the End of the given Line AB, as was required.

To draw a Line Parallel to a Line given.

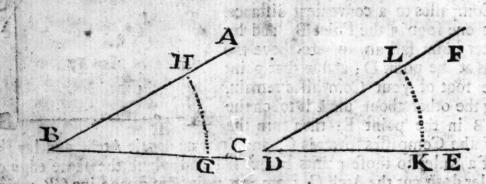


H Let AB be a Line given, whereunto it is required to draw a Parallel. First, fet one foot of your Compasses in the Point C, and opening the other at pleafure draw the Arch E, then with the

fame Distance set one foot in the Point D, and draw the other Arch F; Lastly, lay a Ruler to the Convexities of both those Arches, and draw the Line GH, which shall be a Parallel to AB, as was required.

How to make an Angle equal to an Angle given.

Let ABC be the given Angle, draw the Line DE, and upon B as a Center describe the Arch G H, between the Sides B A and B C, and upon the Point D, with the same Extent describe the Arch KL, and place the Extent GH from K to L, then through the Point L, draw DF: So is the Angle EDF equal to ABC, which was required.



CHAP. III.

Treateth of the Doctrine of Plain or Right-lin'd Triangles.

SECT. I. Containing some Things necessary to be understood, relating to the Science of PLAIN TRIGONOMETRY.

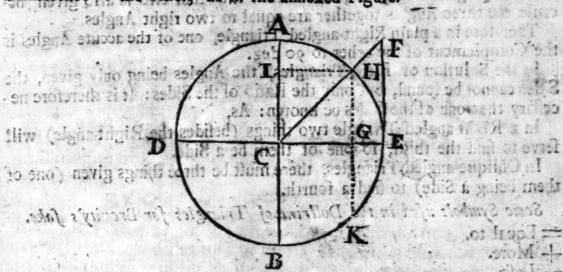
The Dollrine of Triangles is conversant in the Mensuration of Triangles, Plain or Spherical, comparing the Sides and Angles together, according to known Analogies, whereby three Things being given, either Sides, Angles, or both, a fourth Side or Angle may be found.

But because the Angles, of both, Plain and Spherical-Triangles are measured by Arches of Circles, and the Sides likewise of Spherical Triangles are themselves Arches of great Circles, therefore these Arches are in a manner reduced into the Right-lines applied thereunto.

The Right-lines applied to Circles, are Chords, Sines, Tangents and

Secants.

A. Chord is a Right-line drawn in a Circle, from one part of the Circumference to the other, as in the annexed Figure.



HK is the Chord of the Arches HEK, and HDK; also DE the diameter, is the Chord of the Semi-Circles DAE and DBE.

The right Sine of an Arch is half the Chord of twice that Arch, as HG being half the Chord HK, is the right Sine of the Arch HE, also of the Arch HAD, the Arch HE being the half of HEK, and the Arch HAD being half the Arch HDK. The Sine Complement of the Arch HE is HI, equal to CG.

The Versed Sine of an Arch, is that part of the Diameter which lies between the right Sine of that Arch and the Circumstance of that GP is the Versed Sine of the Arch HE and GD the Versed Sine of the Arch HAD.

The Tangent of an Arch, is a Right-line touching the Arch, being Perpendicular to the Radius drawn to the Point of Contact, and concurring with a Line drawn from the Center, through the Term or End of that Arch: so EF is a Tangent of the Arch EH.

A Secant is that Right-line drawn from the Center of the Arch, until

it meet with the Tangent; so CF is a Secant of the Arch EH.

It is to be understood that every Circle is divided into 360 equal Parts. called Degrees: every Degree into 60 Parts, called Minutes; and every

Minute into 60 Parts, called Seconds, &c.

The Complement of an Arch or Angle, is commonly the Complement thereof, to (or that which makes it up) 90 deg. But if it be meant the Complement thereof to a Semi-Circle, it is expressed by faying the Complement to 180 deg.

A Plain-Triangle is contained under three Right-lines, and is either

Right-angled or Oblique.

In all Plain Triangles, two Angles being given, the third is also given: -And one Angle being given, the Sum of the other two is also given, because the three Angles together are equal to two right Angles.

Therefore in a plain Right-angled Triangle, one of the accute Angles is

the Complement of the other to 90 deg.

In the Solution of Plain Triangles, the Angles being only given, the Sides cannot be found, but only the Ratio of the Sides: It is therefore neceffary that one of the Sides be known: As,

In a Right-angled Triangle two things (befides the Right-angle) will

Terve to find the third, so one of them be a Side.

In Oblique-angled Triangles, there must be three things given (one of them being a Side) to find a fourth.

Some Symbols used in the Dollrine of Triangles for Brevity's sake.

the and aimir on a new y

= Equal to. + More.

- Less.

* Multiply by, or drawn into.

Over a Number stands for Degrees, as 120 fignifies 12 deg.

/ Signifies Minutes, as 12/is 12 Minutes.

cr. a Side. crs. Sides said man at a la bried and that gried and

CAn Angle, Ls Angles & Is and and the Call for Some to) of the said Marie Build and the point O.A.

Z The Sum.

X The Difference.

S Sine.

Sc. Co-Sine, or Sine Complement

Co. Ar. Complement Arithmetical. All about par to said follow out a

t. Tangent.

tc. Co-Tangent, or Tangent Complement.

2 R Ang. two Right-Angles.

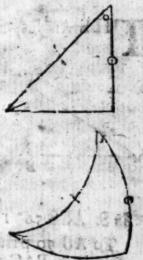
Q. Square,

In Right-angled Plain Triangles, the Sides comprehending the Right-Angle are called the Legs; and the Side subtending (or opposite to) the Right-Angle, is called the Hypotenuse.

In the Doctrine of Triangles; three Letters denote an Angle, as BAC fignifies the Angle at A; ACB the Angle at C. Two Letters thew a Side,

as Side AB, or AC.

In the Doctrine of Triangles, the given Sides or Angles are noted with a Dash, thus (')



The required Sides or Angles with a Cypher, thus, (o)

In Right-angled Plain Triangles, there are seven Cases, and in Oblique Triangles five; For the Solution of which, these Four Axioms are sufficient.

AXIOM 1. Of Right Angled Triangles.

In all Plain Right angled Triangles, any of the Sides may be made Radius; and the other Sides will be Sines, Tangents or Secants: and what Proportion the Side put for Radius, hath to Radius, the fame Proportion hath the other Sides, to the Sines, Tangents, and Secants by them for presented.

AXIOM 2. Of Oblique Triangles.

In all Plain Triangles, the Sides are in fuch proportion one to another, as the Sines of their opposite Angles.

AXIOM 2.

In all Plain Triangles, As the Sum of two Sides is to their Difference; so is the Tangent of the half Sum of their two opposite Angles, to the Tang. of the Difference of either of them, above or under the half Sum.

C 2

AXIOM &

AXIOM 4:

In all Plain Triangles; As the Base is in proportion to the Sum of the other Sides, so is the Difference of these Sides, to the Difference of the Segments of the Base.

SECT. II. Of RIGHT-ANGLED PLAIN TRIANGLES.

Cafe I.

THE Angles, and one of the Legs given, to find the other Leg.

Example.



In the Triangle ABC,
There is given
BAC 33° 45' } BC required
AB, 90 parts. } BC required

The Operation by the Logarithms.

As S. A	CB 56° 15' Log-	-		- 9.91984
To A	B 90 parts S. BAC 33° 45'	-		- 1.95424
So is	S. BAC 33° 45'		ingled Palm I	9.74474
To D	والألوم المسالين والمساورة	16 10 (11 41 6)	les five; Por Sie	11.69898
10 0	C required, 60, 19	parts —	ALMERICAN TOTAL STREET	- 177914

The General Rule for working Proportions by the Logarithms.

Add the Logarithms of the Second and Third Numbers together; From that Sum subtract the Logarithm of the first, and the Remainder is the Logarithm of the fourth Number sought, as is apparent by the precedent Operation.

Note; That the Work may be abbreviated in this and the following Cases: When Radius is not put in the Proportion, then take the Complement Arithmetical of the first Logarithm; and then adding the Logarithms of the second and third, and the Complement Arithmetical of the first into one Sum, from which bating Radius, or an Unite towards the left hand) the Remainder is the Logarithm of the fourth Number.

and Times and the of them. above or unlawing in the

The Operation by the Compl. Arith.	
As S. ACB 56° 15' Log-	
To AB 90 parts	0.08016
So is S. BAC, 33° 45'	9.74474
To AC required, 60, 13 parts	The same of the sa
The Compl. Arith. of a Log. is the Remainder there ed from Radius.	of, being subtract-
So the Compl. Arith. of S. 59° 15'	10.00000
is 0.08016, as here appears:	9.91984
The Overstand of the State of t	0.08016
But a readier way is hinted by Mr. Norwood, thus	By taking the

Compl. or Refidue of the first Figure towards the left-hand unto 9, and fo of the rest, until you come to the last Figure towards the Right-hand thereof, fet down the Residue to 10, thus, To take the Compl. Arith. of 9.91984. For 9 I write this Residue unto 9, which is 0; for 9, 0; for 1, 8; for 9, 0; for 8, 1; for 4, the Compl. to 10, which is 6. And so I have 0.08010, which is the Compl. Arith. of 9.91984.

How to work this and the following Cases by Gunter's Scale, shall be

shewn in the Use of that Instrument.

Case II.

The Angles, and one of the Legs given, to find the Hipotenufe. Example. In a Triangle ACB. There is given, ACB 560 15' 7 AB 90 parts

The Operation. As S. ACB 560 15' Log. To AB 90 parts So is Radius

To AC required, 108 7 parts In the Operation of this Cafe there is no need to take the Compl. 2.03440 Arith: because Radius is one of the four Terms in Proportion; nor rof adding the Logs, of the fecond and third together, according to the general Rule aforegoing; only subtract the former Figures of the first Log. from the second Log. And in Subtracting the last Figure of the first Log. add 10 to the corresponding Figure of the second Log, viz.

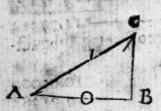
Say, 9 from 11, there remains 2; This Remainder 2.03440, gives the Log. of the fourth Number required.

Plain Trigonometry.

But if the Compl. Arith. of the Log. of the first Term be taken, the Labour of Substraction may be faved.

Cafe III.

The Angles and Hipotenuse given, to find either of the Logs.



Example. In the Triangle ABC There is given ACB 56° 15' AB required AC 108 parts \$

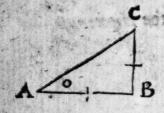
The Operation.

To AC 108 parts 2.03342 So is S. ACB 56° 15' 9.91984	As Radius————	A STATE OF THE STA	10,00000
50 IS 3. ALB 56° 15'	To AC 108 parts	 	
现在一种的现在分词形式的现在分词形式的现在分词形式的现在分词形式的现在分词形式的现在分词形式的形式的形式的形式的形式的形式的形式的形式的形式的形式的形式的形式的			

In this Operation, the second and third Log. being added together, the first, being Radius, is easily subtracted, by curting off the last Figure towards the left-hand, as is evident in the Example. Cope IV

remutal sent to oill one or own The Legs given, to find the Angles.

Example.



In the Triangle ABC, There is given give A element a nl AB 90 3 BAC required

The Operation.

As AB, 90	
To Deding	24
To Radius————————————————————————————————————	10
The state of the s	7 1 5
50 IS BC 60	5

t. BAT required, 33 41 This Operation is performed as the Example in the fecond Cafe beforegoing.

Cafe V.

The Hipotenufe, and one of the Legs given, to find the Angles. Example.

In the Triangle ABC, There is given AC 1087 CB required. AB 90 S

The Operation.	
As AC-108	
To Radius	10.00000
So is AB 90	1.95424
To S. ACB required, 56° 26'	9.92082
This is performed as the precedent Operation	in the fourth Case.
Case VI.	To the Contract of the Contrac
	I has carbod in notation and
THE ST SAME HOURS TO AN ARTHUR LAND TO SEE	AZ B
This Case requires a double Operation. 1. By the 4th Case to find the Angles. 2. By the 2d. Case to find the Hipotenuse. The first Operation.	
As AB, 90	1.95424
To Radius	10,00000
So is BC 60	1.77815
Tot. BAC, 33° 41'	9/82391
The second Operation.	
As S. BAC 33° 41'	9.74398
To BC 60	1.77815
So is Radius	10.00000
To AC required, 108, —	- 2:03417
Cafe VII.	France Stoot Same
The Hypotenuse, and one of the Legs given, Example.	to find the other Leg.
In the Triangle ABC, There is given AC 108 AB 90. BC required.	orlici
This Case likewise requires a double Operation. 1. By the 5th Case to find the Angles. 2. By the 1st or 3d Case to find the Leg.	and to the abjoints we while

Plain Trigonometry.

The first Operation.

	-100 Juli	Operation.	
As AC 108-	\$ \$177.7 m \$10.0		2.03342
To Radius -		Superior engineers market a second	10.00000
So is AB 90 -	The second second	Marine Landin make sugar a land	1.95424
To S. ACB 56°	261	e considerate escapata escapatados escapatados escapatados en el considerate en el c	9.92082
9,2064	The Teroni	Operation on upon H	
As Radius	derestion in the	fined as the proceson	· This is perfo
		17 1/3	10.00000
To AC 108 —	O A Cherry	and the first of the	2.03342
	3° 34' — —	[BETTE : 1948 - 10 10 10 10 10 10 10 10 10 10 10 10 10	9.74265
To BC required			X1.77607
The fixth and for	eventh Cases before	e going, may be per	ormed without
the Cannon of Sin	es and Tangents, b	y the 46 Proping End	vid. vis. That
in Flain Right ang	led Triangles, th	e square of the Hypo	tenuse is equal
to the sum of the	Squares of the tw	vo Legs. alduon besti	This Cafe requ
	Example of the	be Sixth Cafe.	L sur By the A
Ç.	ing coupless	ABC III O WED A	2 By the 2d
	There is give	The fuller	
0 1	AR co	A	As AB, co
105426	BC 60 }	A C required.	a solbell of
Acoust B			So is BC 60 *
Square the giv	en Legs feverally	, add their Squares	together, the
Square Root of the	at Sum is the Hyp	otenuse required.	e course .
	The op	eration. 301	
OP BA 1398		quare of AB 8100	AsS. BAC 232
71877.1 90	oo the S	quare of BC 3600	- 09 DR 01
00000000	00		os AC required
-01803417	360	BOI (0	os AC required
		5/02 Cafe	by the transfer of
oquate 0100 oq	had of matric and	and one of the L	The Hyperens
side other Testing	man 6, 202 cg	-5/14m/208 \1700	
		1664	
		9 32 9	In the Triang
0.		is given	There
	Otherwise by th	e Logarithms simpor	AC TOS SBO
From the double	Log. of the great	ter Leg fubtract the I	og of the lefs,

From the double Log. of the greater Leg subtract the Log of the sels, and to the absolute Number answering to the Difference of the Logs, add the less Leg; half the Sum of the Logs, of the said Sum and less Leg, is the Log. of the Hypotenuse required and on the less leg, and the less Leg, is the Log. of the Hypotenuse required and the less leg, and less leg, is the Log.

The Operation.

The greater Leg AB, 90 Log.	7.95424
The fame again	1.95424
The double Log	3.90848
The less Leg BC 60 Log. fuber.	1.72875
The absolute Number 135	2.12022
The Sum — 195 Log. ————	2,29003
Less Leg BC 60 Log.	
Sum	1.77815
The Hypotenuse AC 108 3 Sum -	4.06818
Example of the Sixth Cafe.	2.05409
In the Triangle ABC, There is given	toth weight i
AC 108 BC required.	1
From the Square of the Hypotenicle, Subtraft the Sc	B B

From the Square of the Hypotenuse, subtract the Square of the given Leg, the Square Root of the Remainder is the Leg required.

given,	AC 108.	AB 90	peration		Two Side
	108	90	the Sc	uare of AB	8100
	1080	810	aria Caire		3564/59
Squ.	11664	Square 8100	ABC. 48	109	1064
	TO STATE OF	orient) Oct	CIN.		981

Otherwise by the Logarithms

Half the Sum of the Logs, of the Sum, and of the Difference of the Hypotenuse and given Leg, is the Log. of the Leg required.

	The Operation. A saluate soil about the
	The Hypotemule AC 108 For and all algular devis and the
4	The Hypotenule AC 108 The given Leg AB 90
	The Sum 198 Log. 2.20666
	The Diff. 18 Log 7 25507
0	C
	THO LOW BC
	The Leg. Do 59 required, Sum 1.77596 A A A B 2 alock

SECT

Plain Crigonometry.

SECT. III. Of Oblique-angled Plain Triangles,

Cafe 1.

HE Angles, and one of the Sides given, to find one of the other Sides.

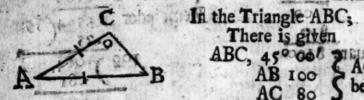
Example. In the Triangle ABC There is given, BAC 33° 45' > BC required. ABC 45 00 AC 40 parts 3

The Operation of this and the following Case, depends upon the second Axiom aforegoing.

The Operation. town al pist Co. Ar. As S. ABC 45° 00' -0.15052 To Side AC 40 -So is S. BAC 33° 45' -To Side BC required, 31 ---After the fame manner you might find the Side AB if it were required.

Two Sides, and an Angle opposite to one of them, being given, to find the other opposite Angle: a Loversupe sit, ha o

Example.



There is given ABC, 45000 ZACB required, AC 80 S being Obtuse.

r: In this case, If the given Angle be Obtuse, the Angle required is Logs, of the Sum Cute.

2. If the given Angle be Acute, and opposite to the greater of the

given Sides, the required Angle is Acute.

3. If the given Angle be Acute and opposite to the least of the given Sides, it's doubtful whether the Angle fought be Acute or Obtuse, and ought to be determined before the Operation; as in this Example.

4 BU 100	The Operation.	Co. Ar.
As Side AC 80 To S. ABC 45° 60	Sum 2.550	8.09691 9.84948
So is Side AB 100	are a mag ; perincor of	2.00000
To S. ACB requires	4 117° 54'	

This Operation produces the Log. Sine of 62° 6' for the Angle fought; but because it is Obtuse, you must take its Complement to 180°. viz, 117° 54'.

Cafe III.

Two Sides, and their contained Angles given, to find the other Angles.

Example.

In the Triangle ABC,
There is given,

AB 25
AC 20
ABC 33° 45'
The Operation of this Case depends upon the third Axiom.

The Side AB 25 7
The Side AC 20
The Side AC 20

The Side AB 25
The Side AC 20
BAC
The Sum of the Sides 45
Sum
146
15

Sum 73 o7 of the unknown Angles.

As the Sum of the Sides AB and AC 45 Log.

To their Difference

O.69897

So is t. ½ Sum of the opposite Angles 73° 07'

To t. of their half Difference

The half Difference added to the half Sum, gives the greater Angle; and subtracted leaves the less.

The Sum of the Angles 73 207

The Difference 20,06 10 sist to cond. of salt

Added, gives ACB 930 to the description of the Subtracted, ABC 530 to the description of the Subtracted, ABC 530 to the description of the Subtracted o

The Base is thet lide woon in hi W show then culture talks.

Two Sides, and their contained Angle given, to find the third Side.

Co. Ar

Plain Trigonometry:

Example.

In the Triangle ABC,
There is given

AB 3357
AC 271 BC required,

BAC 14° 40')

This Case requires a double Operation.

1. By the 3d Case to find the Angles.

2. By the Ift Cafe to find the Side required.

The first Operation.

Section of the sectio	Co. Ar.
As the Sum of the Sides AB and AC 606 Log.	7.21753
To their difference	1.80618
So is t. : Sum Angles	-10.89044
To t. 1 their Difference 29 22	79.91415
By which you will find the Angle ABC to be 43° 18.	
The second Operation.	Co. Ar.
As S. ABC 43° 18' Log.	-0.16379
To Side AC 271	2.43297
So is S. BAC 14° 40'	9.40345
To Side BC required, 100	72,00021

Cafe V.

Three Sides given to find an Angle.

Example.



In the Triangle ABC,
There is given

AB 647

AC 47 BAC required.

BC 344

The Resolution of this Case depends upon the 4th Axiom, reducing the Oblique-Angled Triangle into two Right-angled Triangles, by letting fall the Perpendicular CD upon the Base or greater side AB, and requires a double Operation.

The Base is that fide upon which the Perpendicular falls.

1. To find the Segment of the Base AD.

2. To find (by the 5th Case of Rectangulars) the Angles required.

Of Spherical Criangles.

16	The first Operation. Co. Ar.
AC 47	As the Bafe AB 64 Log. 8.19382
BB 34	To the Sum of the Sides AC and BC 8.1 1.90848
Sum 8 r	
Diff.13	To the Differ. of the Segments of the Bafe : 16 21.21624
	The Base is 64
0.24	The Difference of the Segments 16

Sum 80

Half Sum 40, is AD the greater Segment of the Base, because adjacent to the greater side AC.

The Second Operation.

AC, 47	given AD and		CAR C	og. 1.6720
To Radius		The market	11000	-10.0000
So is AD, 40-			Jan Jan Dan	-1.6020

CHAP. IV.

The Doctrine of Spherical TRIANGLES.

SECT. I. Containing the Affections of Spherical Triangles, and their Axioms.

A Spherical Triangle is that which is described on the Surface of the Sphere.

2. The Sides of a Spherical Triangle, are the Arches of three great

Circles of the Sphere mutually interfecting each other.

3. Spherical Angles are measured by the Arch of a great Circle, intercepted between the fides containing the Angle, the Pole of that Circle being the Angular Point.

4. Those are faid to be great Circles which bisect the Sphere.

Those Circles which-cut each other at Right-angles, pass through the Poles of each other, and the contrary.

6. In every Spherical Triangle, each fide is less than a Semi-Circle. 7. In every Spherical Triangle, any two fides together are greater

than the third.

8. The Sum of the fides of a Spherical Triangle is less than two

Semi-circles.

9. If two fides of a Spherical Triangle be equal to a Semi-circle, the two Angles at the Bafe thall be equal to two Right angles; if they be less than a Semi-circle, the two Angles shall be less; but if greater than a Semi-circle, the two Angles shall be greater than two Right angles.

10. The sum of the three Angles of a Spherical Triangle, are greater

than two Right-angles, and less than fix.

11. Two Angles of any Spherical Triangle, are greater than the Dif-

ference between the third Angle and a Semi circle. Therefore,

12. Any fide being continued, the Exterior Angle is less than the two

Interior oppolite ones.

13. In any Spherical Triangle, the Difference of the Sum of two Angles and a whole Circle, is greater than the Difference of the third

Angle and a Semi-circle.

14. In any Spherical Triangle, one fide being produced, if the other two fides be equal to a Semi-circle, the outward Angle shall be equal to the inward opposite Angle upon the side produced: If they be less than a Semi-circle, the outward Angle shall be greater than the inward opposite Angle, if they be greater than a Semi-circle, the outward Angle shall be less than the inward opposite Angle.

15. A Spherical Triangle is either Right, or Oblique angled.

16. A Right-angled Spherical Triangle, is that which hath one Right Angle at the leaft.

17. The Legs of a Right-angled Spherical Triangle, are of the same

Affection with their opposite Angles.

18. In a Right-angled Spherical Triangle, if either Leg be a Quadrant the Hypotenuse shall be also a Quadrant; but if both the Legs be of the same Affection, of that is, be both greater or both less than a Quadrant) the Hypotenuse is less than a Quadrant, or if of different Affections, then greater, and the contrary.

19. In a Right-angled Spherical Triangle, if either of the Angles at the Hypotenuse be a Right Angle, the Hypotenuse shall be a Quadrant; but if both shall be of the same Affection, it shall be less; if of different

it shall be greater, and the contrary.

20. In a Right-angled Spherical Triangle, the Sum of the Oblique-

21. An Oblique Spherical Triangle is either Acute or Obtufe.

22. An Acute angled Spherical Triangle hath all its Angles Acute.

23. An Obtuse-angled Spherical Triangle hath all its Angles either Obtuse or Mixt, viz. some Acute and some Obtuse.

24. In any Spherical Triangle whose Angles are all Acute, each Side

is less than a Quadrant.

In Spherical Triangles there are 28 Cases, 16 in Rectangular, and 12 in Oblique-Angular. The 16 Cases of Rectangular are resolved by these two Axioms following.

AXIOM I.

In all Spherical Rectangular Triangles, having the same Acute Angle at the Base, the Sines of the Hypotenusa's are proportional to the Sines of their Perpendiculars.

AXIOM

In all Spherical Rectangular Triangles, having the same Acute Angle at the Base; the Sines of the Bases, and the Tangents of the Perpendiculars are proportional.

That all the Cases of a Right-angled Spherical Triangle may be re-

folved by these two Axioms.

The several parts of the Spherical Triangle proposed, must sometimes be continued to Quadrants, that so the Angles may be turned into Sides the Hypotenusa's into Bases and Perpendiculars, and the contrary. By which means the Proportions, as to the Parts of the Triangle given, instead of Sines do sometimes fall in Co-sines, and sometimes in Co-tangents instead of Tangents. Such Parts as do change their Proportion, are noted with their Complements, viz. the Hypotenuse, and both the Oblique Angles, but the Sides containing the Right Angle do not so change.

These are called the five Circular Paris of a Triangle, amongst which the Right Angle is not reckoned, and therefore the two Sides which do

contain it, are supposed to be joined together.

Each of these Circular Parts may by supposition be made the middle Part, and then the two Circular Parts, which are next to that middle

Part, are the Extreams of the Conjunct, the other, remote from the Part assumed are the Extreams Disjunct.

the middle Part Comp. A and Comp. Our the Extrems Conjunct, and the Sides AB and BC are the Extrems Disjunct, and so of the left, as in the Table following.

Mid. Part	Extr. Conj	Extr. Disj.
Leg. AB	Comp. A	Comp. A C
Comp. A	Comp. AC Leg. A B	Comp. C Leg. BC
Comp. AC	Comp. C	Leg. A B Leg. B C
Comp. C	Comp. AC. Leg. BC	Comp. A Leg. A.B
Leg. BC	Comp. C Leg. AB	Comp. AC

The Parts of a Right-angled Spherical Triangle being thus distinguished into 5 Circular Parts, for the more ease in resolving all Spherical Triangles, observe this Catholick and Universal Proportion, invented by the Lord Napier.

The Sine of the Middle part and Radius, are reciprocally proportional to the Tangents of the Extreams Conjunct, and the Co-fines of the Ex-

treams Disjunct.

dve by their

That is; As Radius, to the Tangent of one of the Extreams Conjunct; so is the Tangent of the other Extream Conjuct, to the Sine of the Middle-part.

And also, As Radius, to the Tangent of one of the Extreams Disjunct, To is the Co-fine of the other Extream Disjunct, to the Sine of the Mid-

dle-part.

Therefore if the Middle-part be fought, the Radius must be in the first place, if either of the Extreams, the other Extream must be in the

first place.

Only note, that if the Middle part, or either of the Extreams Conjunct, he noted with this Complement in the Circular Parts of the Triangle instead of the Sine or Tangent, you must use the Co-sine or Co-Tangent.

If either of the Extreams Disjunct be noted by its Complement in the Circular part of the Triangle, instead of the Co-fine you must use the

Sine of fuch Extream Disjunct.

That the Directions may be the better understood, there is in the Table following the Circular Parts of a Triangle under their respective Titles, whether they be taken for the Middle part, or for the Extreams, whether Conjunct or Disjunct; and unto those Parts there is prefixed the

Sine and Co-sine, the Tangent or Co-tangent, as it ought to be by the Catholick Proportion.

Mid. Part.	Exer, Conj.	Extr. Disj.
Sine AB	Co-tang. A Tang. B C	Sine A C Sine C
Co-fine A	Co-tang. AC Tang. A B	Sine C Co-fine BC
Co-fine AC	Co-tang. A. Co-tang. C	Co fine A B Co fine B C
Co sine C	Co-tang. AC Tang. BC	Sine A A
Sine B C	Co-tang. C Tang. AB	Sine A C

AXIOM 3.

In all Spherical Triangles, the Sines of the Sides are in direct proportion to the Sines of their opposite Angles, and the contrary.

AXIOM 4.

In all Oblique angled Spherical Triangles, in which two fides are less than a Semi-circle:

As the Sine of half the Sum of two fides.

To the Sine of half their Difference;

So is the Co-tangent of half the contained Angle.

To the Tangent of half the Difference of the opposite Angles,

And, As the Co-fine of half the Sum of the Sides,

To the Co-fine of half their Difference;

So is the Co-tangent of half the contained Angle.

To the Tangent of half the Sum of the oppofire Angles.

AXIOM 5.

In all Obliqe-angled Spherical Triangles, in which two Angles are less than two Right-angles:

As the Sine of half the Sum of two Angies.

To the Sine of half their Difference,

So is the Tangent of half the interjacent Side,

To the Tangent of half the Difference of the opposite Sides.

And, As the Co-fine of half the Sum of the Angles.

To the Co fine of half their Difference;

Of Spherical Triangles.

So is the Tangent of half the interjacent Side,
To the Tangent of half the Sum of the opposite Sides.

AXIOM 6.

As the Rectangle of the Sines of the containing Sides, To the Square of Radius;

So is the Rectangle of the Sines of half the Sum of the three Sides, and of the Difference of the opposite Side therefrom.

To the Square of the Co-fine of half the Angle fought,

This being premised, the several Cases shall be set down, with their Analogies, and resolved by the Logarithms.

First, Of Right-angled Triangles.
Then Of Oblique.

SECT. II. Of Right-angled Spherical Triangles.

Cafe I.

A Leg, and an Angle opposite thereto, being given to find the other Leg; if it be known, whether the Hypotenuse, or other Angle, be greater or lesser than a Quadrant.

Example.



In the Triangle ABC,
There is given
BAC 23° 30' }AB required.

The Operation.

As Radius ______ Log. 10.00000

To tc. BAC 23° 30' ______ 10.36170

So is t. BC 17 43 ______ 9.50442

To S AB required, 47° 17' ______ 79.86612

Cafe II. A Leg and an adjacent Angle given, to find the other Leg.

Example.



There is given,

BAC 23° 30' BC required:

AB 47 19 BC required:

The Operation.	
As tc. BAC 23° 30'-	-Log. 10.36170
To Radius	10.0000
So is S. AB 47° 19'	9.86639
To t. BC required, 17° 43'	9.50465
Case III. The Legs given to find an	Angle.
In the Triangle ABC.	
There is given,	C. C. C.
AB 47° 19' 7 7.0	1
마음이 되지 않는 눈에 가는 다른 가는 그들은 것이 있다. 그리고 있는 이렇게 되는 것들이 없는 것이 되고 있었다면 그렇게 되었다면 살아 있다면 그렇게 되었다면 그렇게 그렇게 그렇게 되었다면 그렇게	ACTB
The Operation.	MAN
As t. BC, 17° 431	Log. 9.50442
To Radius So is S. AB 47° 19!	10,00000
To tc. BAC required, 23° 30'	9.86634
	10.36193
Case IV. The Hypotenuse and a Leg given to fin	d the contained Angle.
In the Triangle ABC,	
There is given.	e is district of
AC49° 48/1 ACD	Deriver Ob. 18
BC 17 43 ACB required	A THE
As Radius-	viga A aparo
	-Log.10.00000
To tc. AC 49° 48' So is t. BC 17° 43'	9.92689
To sc, ACB required, 74° 21'	9.50442
Case V. A Leg and the adjacent Angle given to fin	-29:43131
	d the Hypotenuse.
There is given	
BAC 23° 30' ZAC required	1
Is the second	A LIB
As t. AB 47° 191 The Operation.	which in this
To Radius	Log. 10.03716
So is fc. BAC 23° 30'-	10.00000
To tc. AC required, 49° 47'	-9.96240
Case VI. The Hypotenuse and an Angle given, to to the given Angle	9.92724
to the given Angle.	and the Leg adjacent
	Lin-

Of Spherical Criangles.



There is given

ACB 74° 19'
AC 49 48 BC required.

The Operation.

As tc. AC 49° 48'-	Log. 9.92689
So is fc. ACB 74° 19'	10.00000
To t. BC required, 17° 44'	<u>-9.43188</u> <u>-9.50499</u>
Case. VII. The Oblique Angles given to find to Example. In a Triangle ABC	the Hypotenuse.
A There is given.	- 17° 431-
ACB, 74° 19' LAC required	2

The Operation.

23 30 5

As Radius	Grand Brand of State of	Log. 10.000	000
To tc. ACB 74° 19'		9.448	336
So is tc. BAC 23 30 -		10.361	
To sc. AC required, 49°			
Cole VIII. The Hypotenule	and one of the	e Angles given to find	the

Cose VIII. The Hypotenuse and one of the Angles given, to find the other Angle.

Example. In the Triangle ABC,
There is given,
ACB 74° 19' BAC required.
AC 49 48 BAC required.

The Operation.

	1.00 0 4/846
To Radius	Log. 9.44836
30 181c. AC 49° 48°	-9.80987
To tc. BAC required, 23° 31'	-10.36151

fire to the given Angle. and an Angle given, to find the Leg oppo-

Ex

Emample.

In the Tr	iangle	ABC.		1
There i	s give	n,	A. The	
BAC 23' BC 49	30'	BC r	equire	d.
47	9100	or, may come.	3-12-17-17-18-18-18-18-18-18-18-18-18-18-18-18-18-	be
As Rad	ius	is taken count		<i>-</i>



As Radiu	I	be Operation.		
To f. I	BAC 23° 30'-	-	The state of the s	9.60070
	BC required, 1	managed by the second of the first place and the first		9.88298
afe X. A	Leg and an A	ngle opposite	thereto, being gi	iven to find
known Ar	igle, be greater	or less than	a Quadrant.	200) 01 111

Example.

In the Tr	iang	le AB	C	N.	
There					
BAC 230	201	2			
BAC 23° BC 17		PAC	req	1116	d.



The Operation.	老的是有某些
As f. BAC 23° 30'	og. 9.60070
To Radius————————	-10.00000
So is f. BC 17° 43'	9.48332
To 1. AC required, 49° 45'	-0.88262
Case XI. The Hypotenuse and a Leg given, to find the An	gle oppofite

on the world a result to

Example.

In the Tria	ngle ABC	
There is		
		esquired
BC 17	43 5 BAC	required.



As f. AC 49 487	1-	-000
To Radius	CV (274) (2) (2) (2) (2) (2)	9.88298
So is f. BC 17° 43'	PACE AND DESCRIPTION OF THE PA	9.48332
To f. BAC required, 23° 281		9.60034
Cafe XII. A Leg, and an Angle adjacent thereunto being	ng given,	to find
the other Angle.		Ex

Of Spherical Criangles.

A B

Example. In the Triangle ABC
There is given,
BC 17° 43' BAC required.
ACB 74 19 BAC required.

The Operation.

As Radius — Log.	10.00000
	9.98352
So is fc. BC 17 43	9.97890
To fc. BAC required, 23° 30'	x9.96242

Case XIII. A Leg and an Angle opposite therete, being given, to find the other Angle; If it be known whether it, the other Leg, or the Hypotenuse, be greater or less than a Quadrant.



Example. In the Triangle ABC,
There is given,
BAC 23° 30! ACB required.
The Operation.

As fc. BC 17° 43' —————	Log. 9.97890
To Radius So is fc. BAC, 23° 30′	10.00000
To f. ACB required, 74° 19'	9.98350

Example. In the Triangle ABC,

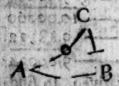
A PB

There is given,

ACB 74° 19'
BAC 23 30 BC required.

The Operation.

As f. ACB 74° 19'	Log. 9.98252
To Radius ————————————————————————————————————	10.00000
To sc. BC required 17° 43' Case XV. The Legs give	en, to find the Hypotenule.



Example. In the Triangle ABC,
There is given,
AB 47° 19' AC required.
BC 17 43 AC required.

The Operation.

As Radius ———————	Log. 10.00000
To fc. AB 47° 19'-	9.83119
So is fc. BC 17 43	
To fc. AC required, 49° 47'	9.97899
Case XVI. The Hypotenuse and a Leg given, Example In the Triangle ABC, There is given, AC 49° 48' 3 BC 47 43 AB required.	
The Operation.	Chine BOANA
As fc. BC 17° 43'	Log. 9.97890
To Radius —	10.00000
So is fc. AC 49° 48'	9.80987
To fc. AB required, 47° 21'	9.83097

SECT. III. Of Oblique angled Spherical Triangles.

Cafe I.

TWO Sides, and an Angle opposite to one of them, being given; to find the other opposite Angle; if it be known, whether the Angle fought be greater or less than a Right Angle.

Example.

In the Triangle ADE,
There is given,
AE 69° 47'
DE 38 28
DAE 37 03
ADE required
being Obtufe.

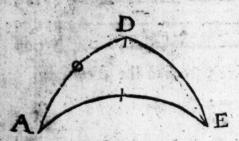


As f. DE 38. 28/ Tof. DAE 37 03 So is f. AE 69 47	. Ca A
So is f. AE 69 47	-Log. 0,2061
4.010.2.00 LOZIN CONT. 11.24.0.00.2.4.00.1.00 LOZIN CONT. CO	9.7799
To C ADE account	

Di Spherical Criangles.

Cafe II. Two Angles, and a Side opposite to one of them, being given, to find the other opposite Side; if it be known, whether it be greater or less than a Quadrant.

Example.

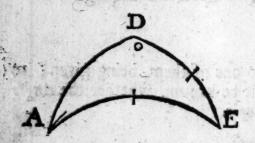


In the Triangle ADE;
There is given
ADE 114° 38' AD required
AED 45 00 being less than
A E 69 47 Sa Quadrant

	The Operation.	Co. Ar
As f. ADE -114	(BERNEL MODELLO	Log. 0.04144
To f. AE 69		9.97238
So is f. AED 45	00	-9.84948
To f. AD requir	red, 46° 53'	x9.86330
The Resolution of	f this and the former Case d	epends upon the third
Asciom.		, Dansopari (LA sul cie

Case III. Two Sides, and their contained Angles being given, to find the other Angles.

Example.



In the Triangle ADE,
There is given,
DAE 37° 03' SADE
AE 69 47 and
AD 46 53 AED
required.

The Operation.

AE	690	471				
AD			- C.m.	-00	001	
Diff.	22	54	Sum; Diff.	II	27	
DAE	37	03	half th	ereof	is 18	31'
	4				- 110	oleans.

As L = Z cr . AE and AD 58 20	Log. 0.07001
To f. 2 X cr	9.29779
	79.84286

	La lea la Chana e sac fee at l
As fc. 2 Z ci. AE and AD 5	8 20 Log. 0.27986
To ic. 1 X c12	1-27
So is tc. ½ DAE	8 31
To t. ½ Z Ls D and E-7	9 49
$\frac{1}{2}$ Z Ls D and E $-$ 7	9.49
½ X 4s ————3	4 51
	4 40 ADE 7
Rem. 4	4 58 Required.
	The state of the s

Having by the fourth Axiom found the half Sum, and half Difference of the Angles; if to that half Sum you add the half Difference, the Total is the greater Angle; and if from the half Sum, you subtract the half Difference, the Remainder is the lesser Angle fought.

Note; If the Sum of the two containing Sides exceed a Semi-Circle, then subtract each fide severally from 180, and proceed with those Complements as with the Sides given in the Example aforegoing. The Operation produces the Complements of the Angles sought to a Semi-circle.

Case IV. Two Angles, and the interjacent Side being given, to find the other Sides.

Example.
In the Triangle ADE,
There is given,

DAE 26 23 SAE ADE 137 55 Sand required.
AD 81 50 DE



AD OI JULDES,	no alle al lines	HADE OWNER	DIVETT. AND	The result of
daily beneat.	The Operat	ion mind sin	vd sbig l	nilli oli
ADE 137 55	The Commi	1		
DAE - 26 23	and the same	barre reme E.F.	0,	AS I. AL
Sum 164 18	1 Sum, -	CO 1000		101
Diff. 111.32	Diff.	82° 09	88 BOL	S0.18
AD - 81 50	half thereo	-40 55		3 07 3
		40 79	Control of the Contro	PRES. 22 TO SECTION SE
As f. ? Z Ls A and D_	80	50	Destination of	O. Ar.
To f. 1 X Ls	82 09	Carried Co.		0.00409
So is t. AD	40	o midia		9.91738
Tota X ch. AE & DE			100	9.93789
- F 2 de tro ME & DE	5) 52 -		-	9.85936
	1 1 1 h	ST. Den. C	DU. DIN	A.

			A contract	. (Co. Ar.
As fc. & Z Ls A and D 82	09 -	CAR BEST	POR TRANSPORT	REDITION OF THE RESIDENCE	0.86461
To ic. 2 X ts-55	46 -	and the same of the			9.75017
So is t. 1 AD40	55 -		194	M 21 63	9.93789
To t. ½ ZAE and DE-74	. 2 l -	ACTION A	12.1	16	0.55267
Z cr. AE and DE - 74	21			1	
½ X cr³. ———————35	52			4- 6	
Sum	13 A	E requi	red.		
.ht.lopsRem. 38	29 D	EJ			

This Case is wrought by the fifth Axiom, and the half Sum of the Sides added to the half Difference, gives a greater Side; and the half Difference subtracted, leaves the lefs.

Note; If the Sum of the given Angles exceed 1800, fubtract each Angle from 1800, and proceed with Refidues, the Operation will produce each Sides Compl. to a Semi-circle.

Cafe V: Two Sides, and an Angle opposite to one of them, being given, to find the third Side; if it be known, whether the other oppofite Angle, of the required Side, be greater or less than a Quadrant.

Example: In the Triangle ADE,

AD 46 53 And AE required, DE 38 28 being lefs than a AED 45 co Quadrant.

There is given.

The Operation of this Case depends upon the 3d and 51h Axioms. By the third Axiom find the Angle opposite to the other given Side: Secondly, Having two fides, and their opposite Angles, you may find the third Side by the former part of the fifth Axiom inverted.

As f. AD	The Operation	4. 75 Tes 201	Co Ar.
To f. AED 45 00 -		Log	
So is f. DE 38 28 -			
To f. DAE 37 03			
AED 45 00			
DAE 37 03		of hen health.	1 Tak
00000 Sum. 82 03 4 8	in, ar or	3 3 4 3	6
Diff. 07 57 1 Di	n. 03 28	Little C. And A	
DE 38 28	and an analysis of the same	La Charlet	
Diff. 08 25 T D	iff. 04 12		Cal

So is t. 2 X ci. AD&DE 04 12	9.81709
	8.86590
To t. ½ AE required 34 52	79.8430
34 152	o le la Co

case VI. Two Angles and a Side opposite to one of them, being given to find the third Angle; if it be known, whether the opposite Side, or Angle required, be greater or less than a Quadram.

In the Triangle ADE,

There is given,

DAE 37° 03' ADE required, beAED 45° 00 ing Obtufe.

ED 38° 28



The Resolution of this Case depends upon the third and fourth Axioms.

First, By the third Axiom find the Side opposite to the other Angle.

Secondly, Having the two Angles, and their opposite Sides, the third Angle may be found by the former part of the fourth Axiom inverted.

20.0.0	0 1	The Operation.		Co. Ar.
As f. DAE	-37 03		Log.	0.22004
To f. DE	38 28	The same of the same	रा शर व	
So is f. AED	45 00		ेर 18 जिस	9.84948
To f. AD-	-46 53			29.86335
AD	46 53	The second second		
DE	38 28			
Sum,	85 21	: Sum, 420 40	7	
		Diff. 04 12	- Ak and Ak A	
AED-	45 00	The same of the sa	X is D and E	
DAE	37 03	tion and appropriate adaptation of the state		
Diff.		1 Diff. 03 58	DAE segutive	
		C American	PP A PP	

	0 1		Co. Ar.
Asf. & X cra. AD a	nd DE 04 12 -	1 4	- Log. 1,13527
To f. + Z ci			9.83106
So is t. 1 X-Ls A at			8.84120
To tc. & AD requi	ired, -57 19 -		x9.80733
government of the or	57 19	The second second	
	114 38 16	quired.	

Case VII. Two Sides, and an Angle opposite to one of them, being given, to find the contained Angle; if it be known, whether the other opposite Angle, or the Angle required be Acure or Obtuse.

wood Di recisitur insponi ad il 1- Example.

In the Triangle ADE There is given,

AED 45° 00' DAE required, being F AD 81 503

This Case is wrought by the help of the third and fourth Axioms. First, by the third Axiom to find the other opposite Angle, Secondly, by the fourth Axiom, to find the contained Angle.

	0. 1	. The Operation.	Co. Ar.
As f. AD-	81. 50-	netgu edalji a Grija. Godenie sir zijasa 4.	Log. 0.00443
So is f.	AE 110 13-	the divisit, and take	9.97238
A	DE 137 55	quired	29.02029
40000001B		Diff. 469 27'	a agaist
The state of the s	D 81 50	SO Server and server a	So is 1. AED &
93.S	um, 192 03 ½	Sum, 96 or	à CA
)iff. 28 23 ½	Diff. 14 11.	2

As f. & X cr. AE and AD-14 1	reth lung har s	-Log. 0.61079
To f. \(\frac{1}{2}\) Z cra \(-\frac{1}{2} \) So is t. \(\frac{1}{2}\) X \(Ls \) D and E \(46 \) 2	1	9.99760
To tc. 2 DAE required, 13		

DAE 26 22 required.

Gase VIII. Two Angles, and a Side opposite to one of them, being given, to find the interjacent Side; if it be known, whether the other opposite Side, or Side sought, be greater or lesser than a Quadrant.

Example.

In the Triangle ADE, There is given,

wildser Ca

AED 450 00 AE required, being DAE 37 28 Sless than a Quadrant



This Case is resolved by the third and fifth Axioms. First, By the third Axiom, to find the other opposite Side.

Secondly, By the fifth Axiom, to find the interjacent Side.

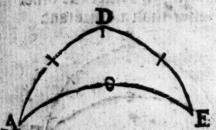
	The Operation.	Co. Ar.
As f. DAE-37	03	Log. 0.22004
To f. DE—38	28	9.79383
	5kg (175) 2kg (185) 186(186) 186(186) 186(186) 186(186) 186(186) 186(186) 186(186) 186(186) 186(186) 186(186)	
AED 450	ool lane I de man da be la	is like independent
DAE 37	03	
ALL ALL THE CONTRACTORS AND ADDRESS OF THE PARTY OF THE P	03 1Sum, 419 01/	
AD 46	57 ½Diff. 03 58	the following funds
DE 38	28	soft to long of the long land
Diff. 08		E this of of the
		And The State of Stat

As f. 1 X Ls A and E 03 58	Con Ac.
m. r 17:1-	Log.1.16005
So is t, ½ Xcr : AD and DE o4 12	-8.86590
The AT - AT - The stand of stand	

69 44 required.

Case IX. Two Sides, and their contained Angle being given, to find the third Side.

Example.



In the Triangle ADE

There is given

ADE 137° 55'

AD 81 50 AE required.

DE 38 28

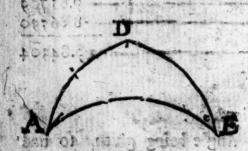
The Resolution of this and the sollowing Case is deduced from the Lord Napier's Catholick Proposition (the Oblique Triangle by a supposed Perpendicular being reduced into two Rectangulars) by the Ingenious Mr. Collins, in his Seller on a Quadrant, whom in this I shall imitate.

The Operation.

As Radius	Tog to occor
To fc. ADE the contained Angle, 1270 551	9.87050
30 is t. Dr. the letter Side	9.90009
If the contained Angle be less than 90°, subtract the	x9.77059
If the contained Angle be less than 90°, subtract the the greater Side; but if it be greater than 90°, from to 180°, the Remainder is the Residual Arch.	its Complement

As fe. of the fourth Arch30 31Lo	g. 0.06476
To sc. of the Residual67 39	-9.58008
So is sc. of the lesser Side DE38 28	-9.89374
To sc. of the Side required, AE	-x9.53858
Cafe X. Two Angles, and the interjacent Side being given,	
third Angle	X . How

Example.



In the Triangle ADE There is given,

ADE 114 39 AED required, AD 46 53

The Operation.

As Radius————————	Log. 10.00000
To fc. AD the interjacent Side. 4	《CACA 14 · 10 · 10 · 10 · 10 · 10 · 10 · 10 ·
So is t. DAE the leffer Angle, 3 To t. of the fourth Arch — 2	7 17
Arch from the greater Angle; if le ment to 180°, the Remainder is the	han a Quadrant, Subtract the fourth

	Co. Ar
As fc. 4th Arch 27 17	Log. 0.05122
To fc. Refidual Arch—38 04——So is fc.DAE the leffer Angle 37 03——	9.89614
To G A E Deba A - 1	9.90206
Tosc. AEDthe Angle required, 45 00	- 79.84942

In this and the foregoing Case, the Affection of the required Side or

Angle may be determined by the Refidual Arch.

For if the contained Angle, or interjacent Side be less than a Quadrant, and the Refidual Arch more; or when the contained Angle, or interjacent Side is greater than a Quadrant, and the Refidual Arch less, the Side or Angle required is greater than 90°, in all other Cases less.

Cafe XI. Three Sides given, to find an Angle.

In the Triangle ADE, there is given,

AE 110 137 AD 81 50 ADE required. DE 38 28



The Resolution of this Case depends upon the fixth Axiom; and for the more speedy Operation take this brief Direction.

Add the three Sides together, and from their half Sum fubtract the

Side opposite to the Angle required.

Then to the Compl. Arithmetical of the Logarithm Sines of the containing Sides, add the Logarithm Sines of the half Sum and Remainder, Half the total of these four Logarithms is the Sine Complement of half the Angle required.

The Operation	n.
AD 81 502 The containing 1 S.	
DE 38 28 Sides. S.	Co. Ar. 0.20617
AE 110 13 5um, 115° 15' S.	9.95639
Sum, 230 31 Rem. 05 02 S.	
Sum, 115 15	Sum, 19.11016
Remain, o5 02 fc. 68° Which, being doubled, produces A	571 Sum, 9.55508
Which, being doubled, produces A	DE 137° 55' required
of Three Angles di	ven to find a Side



Example. In the Triangle ADE, There is given,

45 00 DE required.

the process of the President of the first Direction

Side one of the he deem required.

This Case is likewise performed by the 6th Axiam, the Angles being converted into Sides, and the Sides into Angles, by taking the Comp. of the greatest Angle to a Semi circle.

Compl. ADE 42 05 2 The adjacent 2S.	Co. Ar. 0.17379
AED 45 00 SAngles. S.	Co. Ar. 0.15052
DAE 26 23 + Sum, 56° 44' S.	9.92227
Sum, 113 28 Rem. 30 21 S.	9.70353
Sum, 56 44	Sum, 19.95011
Rem. 30 21 fc. 19 15 Which, being doubled, gives DE 380	\$ 6um, 9.97505 30' required.

If the greater Side AE were required, the Operation would produce; the Complement thereof to a Semi circle; which subtracted from 1809 ir leaves the Side fought.

folde on of this Cate dependentpartition fight during; and for

that to transfer the Sea Complement of Itali

Aud the thirt Milister and from the still Sur Tribualt the

Thom so me Congle Anithmentical of the Logarity of and of the com-The legislates and one songarithm bittes on the base 19 to and exerciteder,

CHAP. V.

The Doctrine of Plain Triangles applied in PROBLEMS of Plain Sailing.

SECT. I.

The Application of Right-angled Triangles in Plain Sailing.

Lethough the Ground and Projection of the Plain Chart be erroneous, yet feeing it is more facile to the Learner, and may ferve as an Introduction to what is more difficult, it shall not be here omitted.

PROB. I. The Course and Distance given, to find the Difference of Latitude and Departure.

Example. A Ship failing N. E. by N. 372 Minutes. I demand her Difference of Latitude and Departure.

Plate 1. Fig. 1.

In the Triangle ABC,

AC represents the Distance sailed.

AB the Diff. of Latitude

BC the Departure.

BAC the Angle of the Course from the Meridian.

ACB the Compl. of the Courfe.

The Operation. For the Difference of Latitude.

As Radius	The Operation		e Difference	 EUROS AND STREET, 1970 (1988) 1976. 	- 27 (32 S & 15 C) (15 C) (15 C) (15 C) (15 C) (15 C)
To the	Distance sailed		372	Maria Maria	2.57054
50 IS IC.	of the Course,		-33°45 -		9.91985
	Diff. Latitude				CONTRACTOR OF STREET
As Radius	Ci asyl slag	rar the D	eporture.	and I do	TO 00000
To the	Distance failed Course,		9721-		- 2.57054
To the	Departure —	-	206		12.31528
PROB.	II. The Couri	fe and Diff	Latitude be	ing given,	to! find the
THE STREET	ma Departure.		d'anna		Example.

Example. A Shi	p failing N. W.	by N. until her Differen	ace of Lati-
be 3091, I demand	her Distance and	by N. until her Different Departure.	and the second second

Plate 1. Fig. 2.

The O	peration.	For the	e Dift	ance.
	40.000.000.0000.0000.0000.0000		STATE OF THE PARTY	COUNTY OF THE SAME

As sc. of the Course 33° 45'	- Log. 9.91985
To the Diff. Latitude ————————————————————————————————————	
To the diffance failed	2.57011
For the Departure_	Co. Ar.
As fc. Courfe	Log.0.08015
To the diff. Latitude	
So is f. Courfe	9.74474
To the Departure	x2.31485

PROB. III. The Course and Departure given, to find the distance, and difference of Latitude.

Example. A Ship Sailing S. E. by S. until her departure be 206', I demand the distance and difference of Latitude.

Plate 1. Fig.3.

The Operation. For the Distance.

As f. Course	-33° 451
To the Departure ———	206
To the Distance	

For the Diff. of Latitude.

		Co. Ar.
As f. Courle	330 45/	Log. 0.25526
To the Departure.		
So is fc. Courle—	-33 45	9.0108
To Diff. Lat — –		

PROB. IV. The distance and difference of Latitude given, to find the Course and Departure.

Example. A Ship-sails between the North and the East 372', until her diff. of Latit. be 309', I demand the Course and Departure.

Plate 1. Fig. 4.

The Operation. For the Cours

To Radius—			Log. 2,570
So is the Di		为2000 全国中国国际公司公司公司公司公司	2.489
A TOTAL COLOR SEASON SERVICES AND A TOTAL SERVICES AND A SERVICES ASSESSMENT OF A SERVICES ASSESSMENT OF A SERVICE ASSESSMENT	ourse 33° 50'-		9.919

As Radius Log	10.00000
So is the f. Course, 33° 50	-2.57054
To the Departure	- 9.74703

PROB. V. The Distance and Departure given, to find the Course and Difference of Latitude.

Example. A Ship sails between the South and the West 372', until her departure be 206; I demand the Course and Diff. of Latitude. Plate 1. Fig. 5-

The Operation. For the Course.

As the Distance 372'	Log.2.57054
To Radius	-10,00000
So is the departure 206————————————————————————————————————	2.31287
To the S. Course 33° 37'	9.74333

For the Diff. Latitude.

As Radius —————	Log. 1	0.00000
To the distance		2 57054
So is sc. of the Course, ————————————————————————————————————	(6)	0.92052
To the diff. Latitude,		2 40706

PROBLEM VI. The differenbe of Latitude, and departure given, to find the Course and distance.

Example. A Ship failing between the South and West, until her differ. Latitude by 309 min. and her departure 206 min. I demand the Course and Distance.

Plate 1. Fig. 6.

Plain Sailing.

-	0.0500000000000000000000000000000000000			2.5	NO DESCRIPTION OF	
	Opera		Car.		-	5-0
1 DE	Dogra	uion	- 101	ine	LOUT	IE.
Million and Maked band St.	بالانفنات للمحا				Charles and Colored Colored	1000

As the differ. Latitude 309 min. — — — — — To Radius — — — — — — — — — — — — — — — — — — —	-Log. 2.48996
: 1000 -	10.00000 2.31387
To t. Course 33° 41'	9.82391

As f. Courfe	Log. 9.74398
To the departure, 206	2.21387
To the distance ————————————————————————————————————	2.56989

SECT. II. The Doctrine of Oblique Triangles applied in Problems of Plain Sailing.

PROB. I.

TWO Ships fail from the same Port, the one fails E.N.F. 40 min. the other E. by S. so far, until she find the first Ship bear N. W. by W. I demand the seconds Ship's Distance from the Port, and the Dist-Plate 1. Fig. 7. ance between the twoShips.

In the Triangle ADE. A represents the Port.

AD the E.N.E. Courfe, and AE the E. by S. Courfe.

The Operation.

To find the second Ship's Distance from the Port.

		0 L		Marine Same 711	. Co. Ar
As S. AEI)	22 30-		Log-	0.41716
To AD		- 40	Tanana graffine 5.11	and the second	-1.60206
So is S.	ADE —— I	23 45		the state of the same	9.91985
To AE		86	with a land of the second	Secret dub s	¥1.93907

To find the Distance between the Ships.

	0, 1		Co. A	r.
As S. AED-	22 30	Parent and South	Log, 0.4171	16
TO AD	July 602 040 Day	AR WALL WILL SHALL S	1.6020	26
50 15 5. DI	AE33 45-	Hard Marketon and property of the	9.744	14
To DE			XI.7630	96

PROB. II. Suppose there are two Ports that lie East and West one from another; one Ship sails from the Westermost Port N. E. 41, the other sails from the Eastermost Port 80°, and meets with the first Ship: I demand the Course steer'd by the second Ship, and the Distance between the two Ports.

Plate 1. Fig. 8.

Let A represent the Westermost.

E the Eastermost,

AD the Course and Distance of the first Ship,

D the Place where the Ships meet.

To find the fecond Ship's Course.

	The Operation.	Co. Ar.
As DE -		Log. 8.09691
	TEAN SOLD (SEE)	
So is AD -	41	1.61278
To f. AED)-21 14-	Y0.55017
The Courfe i	s N. 68° 46' W. or W.N.W. a little '	Westerly:
	To find the Distance between the two S	
AND DATE	Ship fells from a centian Rote OS E. 48	1. 71.0 Co.94:
TO ED		
So is C A 1		
To AE	TEF and who are thing and or sould have	
* * 7 * 7 * 4 * 4 * 4 * 4 * 4 * 4 * 4 *		#210 dy 12
fails S. by	E. 20 min. the other S. S. W. 25 min. I fance from each other.	lemand their Bear-
In al . M.	LON CREATINGE, TON	
A repret	ents the Road, nose seem to seem of	To feet
AD the	first Ships Course and Distance.	CA
	econd Ships Courfe and Diftance.	AE .
	The Operation. To find the Bearings	Elizable Land
AE 25	1800 001	i thu
AD 20	DAE as Ar	
Sum 45	146 15, Z/s ADE and	As DE the Date
Diff. os	73 - 97 5 Sum - 920219	
ONE TO STATE OF THE PARTY OF TH	of the halfe, 29	

A liter at the Lat	enting forthead	H. Suppost the	Co. Ar.
As Z cra. AE and A	D 45	2150 and and 1	Log. 8.34679
To their Differ.		storen til a gen mo.	0.69897
So is t. ½ Z Ls I	D and E 73° 07!—		- 10.51783
	rence—20 06 —		- x9.56359
\$ Z Ls 73° 0			Section 1
₹ X Ls 20 0	6	ic halletness,	
Sum, 93 1	3 ADE da lo constitu	ar die a sou i sil	
Diff. 53 01	AED SOON AQUAR		
The Bearings of	the Ships are N. E.	75° 31', and 5. W	. 75° 31', or
E.N.E, & E. and W	.S. W. 4 W. Jere.	717	75
10800.6180.	To find their 1	Distance.	- 15 DE George
0.000	and the second sections and the second second second second	or many Ot " I were !	Co. Ar.
As f. AED-	-53° 01'		Log. 0.09756
TO AD	and annually artistic assumed beautifully something	and the second of the second o	
30 IS I. DAE	33 45 77.77	· Markey States	9-74474
To DB	com all iso wind an	dink the min of	- Y1.14333
Let A re	ond Place to the thir present the Port, cond Place	d, and how the fai	led back to the late 1. Fig. 10.
Plate 1, Fig. 8		ration.	
To find	the Course from the	fecond Place to the	third.
AD 8	2 muri (br	ut Bhips Course a	AD the fi
	and Difference. 88	cond Scips Course	AE the fe
Sum, 15	A STATE OF THE STA	The Overstion.	
Diff. 1		1800	AE se
	Later Name of the San	DAE 22	Co. Ar.
As DE the Base -	72	No. 2	Log. 8.14267
To Z cr. AE		The state of the s	2.17609
	ference 14-70		7.14613
To a Segment	of the Base. 29		
	Commence of the second		

DE	DE-72
Segment 29	Segment 29
Diff. 43	Sum—Jor
1 Diff 21 1 or 21	1 - EB. 1 Sum. 501 DB 501.
As AE68'	Log. 1.83251
To Kadius	I0.00000
To fc. AEB, or AED. 719	34' 9.49993 d Place to the third, is N.E. 49° 04', or
To find the	Course back to the Port.
anagan mark same est (100 m) is a 100	Santa L. Hib lens blief den TCo. Ar.
As AD 82 min. ————	Log. 8.08619
To f. AED, 71° 34'	
So is AE 68 min.	
To f. ADE 51° 531	
The Course to the Port is	N. W. 79° 03', or W. by N. a little
Westerly.	Thirds, I of the two Places the one buy

CHAP. VI.

The Doctrine of Plain Right-angled Triangles applied in PROBLEMS of Mercator's Sailing.

HE true Sea Chart, commonly called Mercator's Chart (which is the useful Invention of our Country-Man Mr. Edward Wright, altho' this Stranger hath got the Name thereof) performs the like Conclusions, and almost in the same manner for ease, and yet most exactly; because all Places may be laid down upon this Chart with the same truth as upon the Globe, both as to their Latitude and Longitude, Bearing and Distance from each other.

PROBLEM I.

To find the Meridional Difference of Latitude, or the Difference of Latitude in Meridional Parts.

First, If one Place be under the Equinoctial, and the other in North or South Latitude, the Meridional Parts (in the Table of Meridional Parts) answering to the Degrees and Minutes of the Place's Latitude, is the Meridional diff. of Latitude.

Example.

reator's Setting.

Example.

One Place in Latitude 37° 27' North, the other under the Equino-

Lat. 37° 27' 2426
2426 is the Meridional diff. Latitude.

10

0198

1721

222

Secondly, If two Places be both in North, or both in South Latitude, Subtract the Meridional Parts of the less Latitude from those of the greater, the Remainder is the Meridional diff. Lat. TO it. AEK or AFE-

Example 1.

Took T. M. S. Chaille and an Late and a	M. Pts.
One Place in the Latitude 37° 20' N.	2418
The other in the Latitude 17 10 N.	1046
The Meridional diff. Latitude	1372
Example 2.	M. Pris.
One Place in the Latitude 45° 56' S.	3110
The other in the Latitude 29 17 S	1839
The Meridional diff. Latitude, A a no	od 01271

Thirdly, If of the two Places the one have North Latitude, the other South, add the Meridional Parts of each Latitude together, the Sum is the Difference of Latitude in Meridional Parts.

Example:	M. Pts.
One Place in the Latitude 420	17 'S. 2805
The other in the Latitude 27	
The Meridianel diff. Latitude,	W 2 M 2 J 8 04510

PROB. II.

Both Latitudes, and the difference of Longitude between any two Places being given, to find the Course and Distance.

Example.

Admit the Lizard in the Latitude 70° North, and Barbadoes in the Latitude 13° 12' North, the diff. of Longitude 52° 57' West; I demand the Course and Distance. to get having and I one to be

In the Right-angled Triangle Abc.

A b represents the proper Difference of Latitude,

b c the Departure, in the land to constitute and

A c the Distance failed.

b A c the Courfe

A c b the Compt of the Course.

in-Near John Harris .

Bercacor's Safting.

In the Right-angled Triangle ABC, AB represents the Meridional diff, Latitude BG the difference of Longitude, BAC the Angle of the Course ACB the Compl. of the Course.
The difference of Longitude reduced to Minutes, makes 2177 min.
To find the Meridional Difference of Latitude.
One Place in the Latitude 50° 00' N. 3475. The other in the Latitude 19 12 N. 799 The Meridional diff. Latitude 2676
The Operation. For the Course of the Course of the
As Meridional Difference Lat. 2676 min. Log. 342749
To Radius 1000000
To t. Course 49 53 Web 1175 To some thin in the Course is S. W. web 1175 To some thin in the course is S. W. Web 1175 To some thin in the course is S. W. web 1175 To some thin in the course set of the course is S. W. web 1175 To some thin in the course set of the course is S. W. web 1175 To some thin in the course set of the course is S. W. web 1175 To some thin in the course set of the course is S. W. web 1175 To some thin in the course set of the course se
Lat soo co
0.000001
ProperDiff.Lat.36 48, which is 2208 min.
As fc. Course — 49° 537 — Log. 9.80912 To proper Diff. Lat. 2208
So is Radius 10,00000
To the Diffance—3436
PROB. III. Both Latitudes and the Course given, to find the distance
Example. A Ship fails from the North, until the be in the bat, 13° 12' North, her Course S. W. 30° 57, long S. W. W. Somewhat more Westerly, I demand the Distance and Difference of Longitude.
The proper difference of Latitude is 2208 min. 1705 e od abus. The Meridional Difference of Latitude is 2676,

The Operation. For the Diffances dia on all
As fc. Courfe Log. 9.79934
To the Diff. of Latitude 2208 3334400
So is Radius————————————————————————————————————
To the Distance 3504 3.54456
For the Difference of Longitude.
As Radius Log 10,00000
To the Merid: Diff. Lat. 2676' 3.42749 So is t. Course, 50° 57 10.09086 To the differ. of Long. 3298 73.51835
So is t. Course,
To the differ. of Long. \$298
PROB. IV. Both Latitudes and the Distance given, to find the Course and Difference of Longitude.
Example. A Ship fails from the Lat. 50° North, 3505', until the
be in the Latitude 13° 12' North; I demand the Course and Diffe-
rence of Longitude. The Meridional Difference of Latitude is 2676 min.
The Meridional Difference of Latitude is 2676 min.
The proper difference of Latitude is 2208 min.
The Operation. For the Course.
As the Distance————————————————————————————————————
To Radius————————————————————————————————————
So is the difference of Lat. 22083.34400
To fc. Course
So is the difference of Lat. 2208 To sc. Course For the Difference of Longitude.
market and a second of the sec
As Radius Log. 10.00000
To the Merid. Diff. Lat- 26761 3.42749
So is t. Courfe 10.09086 To the differ. of Longitude 3298 3.51835
3.5 1835
PROB. V. One Latitude, the Course and Difference of Longitude being given, to find the other Latitude, and the Distance.
Example. A Ship fails 5. 509 57' W. or S. W. W. somewhat more Westerly, from the Latitude 50° North, until the Difference of Longitude be 3297', I demand the other Latitude and Distance.
The Meridious Discustoe of Latitude is 2576.

The Operation. For the other Latinude. 10000
As t. Courfe Log. To.09086
To the difference of Longit. 3297
To the Merid. Diff. Lat 2674
The Meridional Parts answering to Latit. 50° North, are——3475 From which subtract 2674 There remains 1. 1. 1. 2. 801
Against which, in the Table of Meridional Paris, is the Latitude of 13° 14', which is the Latitude of the Place, North south of
The proper Difference of Latitude is 2208 min of they
As fc. Course
To the difference of Latitude 2206 So is Radius - 10.00000
To the Distance
PROB. VI. One Latitude, the Course and Distance given, to find the other Latitude and Difference of Longitude.
Example. A Ship being in the Latitude 50° North, fails 8. W. 50° 57', or S. W. 2 W. and fornewhat more Westerly 2505', I themand the other Latitude, and difference of Longitude on 19 ow'r 21 80 94
The Operation For the Difference of Latitude. Sonefild
As Radius Log. 10.00000
Tarata Difference Salaria de
So is fo Course and assured the To the sub south and A
To the Diff. Longitude be 4200 minutes abutite I Hill add
The other Latitude 13 deg. 12 min North. The Meridional Diff. Latitude is 2676 min
As diff. Longitude 4200 millioner 1202 222
For the Difference of Longitude enits H o'l'
As Radius Log 10.00000
To the Meridional Diff. Lat. 2676' obside 12142749
So is t. Course
To the Diff. of Longitude - 3298
The state of the s

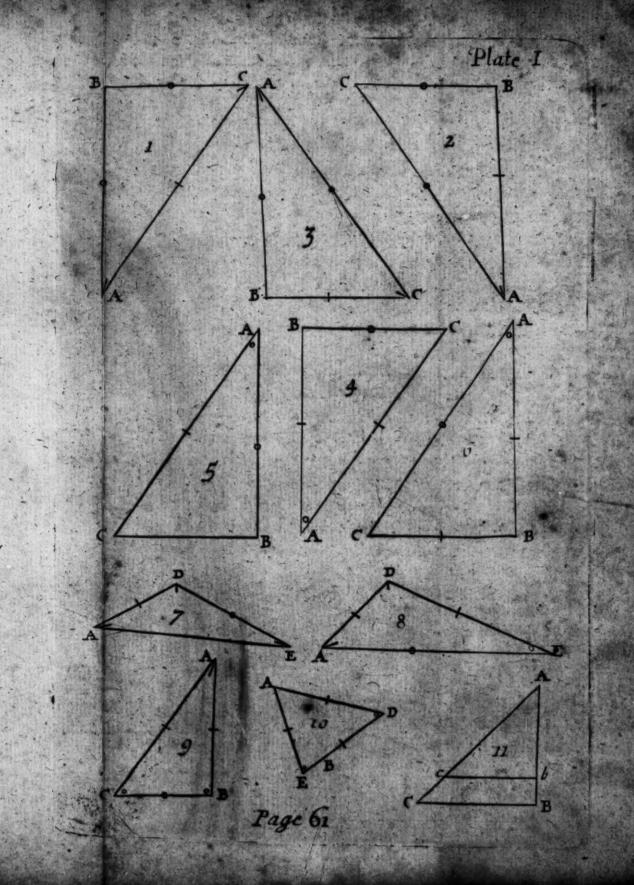
PROB. VII. Two Places both in one Parallel or Latitude, and their

diff. of Longitude being given, to find the Distance between them.

Example. Suppose two Places both in the Parallel or Latitude of 50 deg. and their difference of Longitude 70 deg. I demand the Distance between them.

The Operation.

The Difference of Longitude in Minutes is 4200
As Radius
As Radius
9.80807
To the Diffance. 2700 min
PROB. VIII. Two Places both in one Latitude, and their Distance given, to find their Disterence of Longitude.
Example. Suppose two Places both in the Latitude 50 deg. and the
Diffance between, 2700 min. I demand the difference of Longitude.
The Operation.
As fc. Latitude so deg. Log. 9:80807
So is Radius
To the diff. Longitude 4200 minutes
PROB. IX. Two Places fituated both in one Parallel of Latitude, their
Difference and Difference of Longitude being given, to find the Paral-
lel of Latitude.
Example.
A Ship failing due West 2700 minutes until
her Diff. Longitude be 4200 minutes; I demand what Latitude the Ship fails in.
I demand what Latitude the Ship fails in.
The Operation. abulital radio off
As diff. Longitude 4200 min Log. 3.62325
To Radius
So is the Differee 2700 min.
Po fc. Latitude yo deg9.80811
1800 19 1



CHAP. VII.

The Doctrine of Spherical Triangles applied in PROBLEMS
of Great Circle Sailing.

Lihough it be hardly possible for a Ship exactly to trace out the Arch of a Great Circle, yet it may be of advantage to keep conveniently near it, especially in a Parallel (or East and West) Course.

PROB. I.

Two places differing only in Longitude: 2016 of -

Example. A Ship being in the Latitude 50° North, is bound to a Port in the same Parallel, whose Difference of Longitude Westerly is 47°; I demand the Angles of Position, the Distance in the Arch of a Great Circle, by what Latitude and Longitudes the Arch shall pass, likewise the Course and Distance from Place to Place, according to Mercator.

Let A represent the first Place,

or sriffed mon . sob svir Plate 2. Fig. 12.

The Operation.

To find the Angles of Polition, BAD and BED.

The Oblique-angled Triangle A D E is reduced into two equal Right-angled Triangles A B D and E B D, the Sides and Angles being equal therefore in either of them there is given the Hypotenufe, and the Angle at D, to find the Angle at A or E.

	lo lo	the Triangl	le ABD.	A maria	40
As tc. ADB	23° 30	07	As Kadius	-Log.	10.36170
To Radius	- 128 FT	2,	S.oroTo		10,00000
So is fc. A		3DB	D 21 08		98840
	D-71 3		C ou oT	00-01	
	2 11 3			Carlo Carlo Carlo Carlo	沙什哥

The Complement of Da 70 deg. 76 min. North, is the Latitude of

Great Circle Saffing.

2. To find the Distance AE. In the Triangle ABD.

THE THANKS ADD.	
As Radius, ————————————————————————————————————	Log. 10.00000
To f. DA 40° 00'	6.80807
So is f. ADB23 30	9.60070
To f. AB- 14 51	0.40877
AB-14 51 being doubled, produce	S
At - 29 42, or 1782 min.	BENERAL CONTRACTOR
3. 10 and the Latitudes by which the Arch (hall pass at every five
Degrees of Longitude from A: representing the f	irft Port
First, You must find the greatest Latitude by whi	ch the Arch passes, DB
In the Triangle ABD.	
As tc. AD	Log. 10.07619
To Radius	
30	9.96240
To t. BD 37 35	0.0946-
The Compl. of BD (to oo°) 420 257 is the o	regreff
Decondly. To find the Latitude by which the A	ch naffee at anom Com
Designs of Longitude from A. you must relove the	e feveral Right angled
attailers, Dua, Duc, Bue, Uc.	cance the America
or was a subject to the subject to	lunch the Lander-
Subtracting five deg. from ADB 23 30	dance to the first of
There remains———aDB 18 20	
Subtracting five deg. from —-18 30	
Remains BDc 13 30 0	Ulana SI
And fo for the relt, as follows in the	Table of 100 are
。 1987年 - 1987年 -	THE REPORT OF THE PARTY OF THE
THE HIRIT BOLD	AND IN SHEET OF STREET
To find by what Take I	the Point (a)
BD f or so Can All	the rount (a) panes
De of So. As Radius —————	Log. 10.00000
Dolo 106 30 1 To tc. BD 370 35	Property of the property of th
O D is 11 - 90 So is fc. aDB18 30	ENGINEERING AND
DE 16 30 To tc. Da 39 04	
B D1 21 303	UNG 3, 10,09067
The Complement of D a 50 deg. 56 min. Nor	th is the Lexical C
the Point (a)	m' to the Taninge of
	After

Great Circle Gailing

After the same manner are found the Latitudes for the Points c, e, &v. in the subsequent Table.

III the more	quent a abic.	and a company of the first tenth of
Long.	Lat.	
A 000 001	500 00/7	Thirdly, Having the Latitudes and Lon-
a 05 00	50. 56	· gitudes by which the Arch passes, you may
C 10 00	51 38	find the Course and Distance from Place to
e 15 00	52 06	Place, by Mercator.
f 20 00	52 22	Printed Birth Birth Strain Committee Strain Committee Strain
g125 00	501536 2411	So to find the Course and Distance Aa, There
h 30 00	52 14	is given both Latitudes 50 deg. North,
1 35 00	1051 51	and 50 deg. 56 min. North.
1 k 40 00	11757 11411	and the semiler of the real materials
1 451 00		And the difference of Longitude, 5 de-
E 47 00	50 1100 3	grees Weft. 35 23000 7 no. 2 cus es sullen
T	he Meridiona	1 Difference of Latitude is 87 minutes.
. tr. Fig. 13.	Plate	For the Course.
As Merid.	diff. Lat	87' Log. 5,93954
To Radi	us - moising	TO.00000
So is the	diff. of Long	2.47712

After the same manner you will find the Courses and Distances ac, ce.

-101710	Places.	Courfes.	Distances
129592	From A to a	N W 733	49' 200
Co. 1660	From a to c	N. W -77	13 (1899) (4.9)
100111 100	From c to e	N W -81	28
/ OC # - F	From e to f	N W 85	02 10842 5 2 62
21/1.01	From f to g	N W 19	22 180
12.5339	From g to h	S W 86	45 27921
	From h to i	S W 82	58. 1872
	From i to k	S W 78.	41 788
	From katola	S. WT 25	14 196
	From I to E	S W tall	10 081

But in regard most of the Courses afore-found are so near the West, you may sail W. N. W. 917', until you are in the Latitude 55° 51' North, and then W. S. W. 917 min. further, you will arrive at your Port. By this means you will alter your Latitude almost 6 deg. and the distance is but 52 more than that of a Great Circle, and not above than more than the Parallel or West Distance.

PROB. II. Two Places differing both in Latitude and Longitude.

Heavele. Suppose the two Places to be, one in Latitude 36° North, the other in the Latitude 50° North, the Difference of Longitude between them 68° Easterly. I demand the Angles of Position, the Difference in the Arch, the Latitudes and Longitudes by which the Arch asses, and the Course and Distance from Place to Place, through those latitudes and Longitudes, according to the true Chart.

Let A represent the first place, in the Lat. 36°. Plate 11. Fig. 13.

The Operation.

First, To find the Angles of Position.

AD 54 00 1 ADE 68 00

DE 40 00 \$ADE 34 00 - Simo D. 2 a.

Sum, 94 00 \$Sum, 47 contin. I to fill ad of

Diff. 14 00 \$Diff. 07 00 - suital at c?

Secondly, To find the Distance. In the Triangle ADE.

	位于100mm 100mm 100
As f. AED 79 00-	Log. 0 00805
To f. AD 54 00-	
So is S. ADE 68 00-	9.96716
To f. AE 40 50	29.66317
사용 보다는 아이들에게 되었다. 나는 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은	n. which reduced into minutes makes
2990 minutes.	ii. Which reduced the infinites mates
	Longitudes by which the Arch passes.
First, Find the greatest Latitude of	which the Arch passes.
of year now In the Right ang	led Triangle ABD.
As Radius	Log.1c.000co
To f. AD	
So is f. DAB 51 16-	
DB is 39 deg. 07 min.whofe Com	ol. 50 deg. 53 min. is the greatest Latit.
Secondly, To find the Vertical Angl	
In the Right-angle	
As tc. BAD —————510-161—	Log. 9.90423
To Radius————————————————————————————————————	10,00000
So is fc. AD 54 00	9.76922
To tc. ADB 53 46	9.86499
· LIOM—UDE 00 CO.	of the brent
Subtract ADB 53 46	. 13 As
Remains BDE 14 14	
Thirdly, To find the Latitudes b	y which the Arch palles at every five
Degrees Longitude from A, you m	uft resolve the several Right angled.
Triangles BDa, BDb, BDc, &c.	
Subtracting five deg. from	ADB 43° 46'
There remains	ADb 48 46
Subtracting the deg. from	40 40
Remains	
So of the rest in t	he following Table.
	RDb 12-46

BD	a 48 4	16	BDb	13-46
AND REAL PROPERTY AND THE PARTY AND THE PART	6 43 4		BDi	
BD	c 38 a	16	BDk	03.46
			SOUTH SECTION STORY	01 14
			E PROPERTY OF THE PROPERTY OF	OFFICE SUBSTITUTE OF THE PARTY
			BDn	11 14
BD BD BD	d 33 4 6 28 4 6 23 4 6 23 4 6 23 4	6	BDI BDm	STOCK AND DESCRIPTION

20175.2

Great Cierte Saffing

In the T	riangle e	DB. to	find by	what '	Latitude
In the T	the Arch	paffes	at the P	oint a	

As i. DB	
To Radius	10.00000
So is fe. aDB48 46	STATE OF THE PARTY

Whose Compl. 39° oil is the Latitude at a

After the same manner are found the Latitudes of several Points

6, d, e, Gc. as in the subsequent Table.

Latitude.	Long.	Fourthly, Having thus the Latitudes and Longitudes of the Arch, you may find
4 39 01 6 41 36 6 43 47	05 - 10 - 15	Place, according to Mercator. So to find the Course and Distance
d 45 37 e 47 09 f 48 22	20 1 25 30	Both Latitudes are 36 deg. and 39 deg.
8 49 20 6 50 33 7 50 30	40	The difference of Longitude 5 deg. The proper difference of Latitude 181 min. The Merid. difference of Latitude 228
4 50 49 7 05 03	50	min.
# 50 43 # 50 20 E 50 00	65 68	Substact ADB 52 AS

avo to selled not had a Forthe Course. I sat had a

ne Mend. differ. Lant	228 min.	——Log. 2.35793
So is the differ. of L	ong trude and a series	10,00000
To t. Course 52° 45	ongrune 300 min.	2.47712
	\$2.00mm,1966年1965年1967年1967年1967年1967年1967年1967年1967年1967	10.11919
As Co Comes and	For the Distance.	
To diff. Lat181	Amelia alfai frigire	Log. 9.78197
So is Radius	419 42 A5 1414	
To the distance 299-	San de la sal	10.00000
and the distance 299	一世四年 十十岁 3年10年	2.47571
A TOWN THE RESERVE AND THE AM	是一种的。 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	

After the same manner you may find the Courses and Distances a b, b c, c d, & c, as they follow in the Table.

CT ON THE PARTY	plien has anitted	areas Citalog com	orpiamik.	
dilten from	Places.	Courses.	Distances.	masalata) Marata
Some Raigner	From A to a From a to b	NE 52 45 NE 55 54	299	a rolations. Ar guiderich
ากา เคีย เกา	From b to c	NE 55 54 NE 59 10 NE 62 40	255	The Edi
Deduction and a	From e to f	N E 66 05 N E 70 01	239 m 226 212	oppolice Po
	From f to g From g to b	N E 73 39 N E 77 35	202 199	recommendation of the second
the Aller	From b to i	N E 81 05 N E 85 14	193	Acies Tankar
e are ser	From I to m	N E 89 02 S E 87 19	177	educade) Postar a
7	From n to D	S E 80 13	117	

CHAP. VIII

The Doctrine of the Sphere: Containing fundry Aftronomical Problems wieful in the Art of Navigation.

som coust pares; one of thete valles by the Rouinedial Points.

two farth Fivers Brallel to the Eginnessia and

continued laborations of Concertand is called

HE Poles of the Warld are two fixed Points in the Heavens diametrically opposite to one another, the one visible in our Hemisphere, called the North of Artick Pole, noted with the Letter P.

Plate 2 Fig. 140

South or Antartick Pole, noted with S.

K .2

MA

The Axis of the World is an imaginary Line drawn from Pole to Pole. about which the Diurnal Motion is performed from East to West.

The Meridians are great Circles concurring and interfecting one to

another in the Poles of the World; as PES, and P.c.S.

The Equinottial, or Equator, is a Great Circle 90 deg. diffant from the Poles of the World; cutting the Meridians at Right-Angles, and dividing the World into two Parts, called the North and South Hemi-(pheres; as E = Q.

The Ecliptick is a Great Circle, croiling the Equinollial in the two opposite Points Aries and Libra, and making an Angle therewith (called.

its Obliquity) or 23 deg. 30 min. represented by 5 = vs.

The Circle is divided into 12 Signs, each containing 30 deg. whose Names and Characters follow.

Aries	26	20	Lib	ra A GOS	Paris		1
Taurus	87		8 3 Scor	rpio x or	Fredam'	Paragraphic Same	
Gemini .	II W	hich are	Nor- Sag	ittarius 01	The	se are	Sou-
Cancer	5 the	rn Signs	8 T Cap	ricornus	where	n Signs.	
Leo -	21	100	Ag	uarius	=	la si circa	
Virgo	观	1 21	os a Pilo	ces (103	w Kong	Laboratur	1.27

The Zodiack is a Zone or Girdle, having eight degrees of Latitude on either fide of the Ecliptick, in which space the Planets make their Revolutions. 'Tis divided and diffinguished by the twelve Signs.

The Colures are two Meridians, dividing the Equinodial and the Ecliptick into four equal parts; one of these passes by the Equinodial Points. Aries and Libra, and is called the Equinodial Colure, as P -S.

The other by the beginning of Cancer and Capricorn, called the Sol-

The Poles of the Ecliptick are two Points, 23° 30' distant from the Poles of the World, as I and K.

The Tropicks are two small Circles, parallel to the Equinottial and distant therefrom 23° 30', limiting the Sun's greatest Declination.

The Northern Tropick paffes by the beginning of Cancer, and is called

the Tropick of Cancer , as 5 2 D.

The Southern Tropick passes by the beginning of Capricorn, and is

called the Tropick of Capricorn; as A b vs.

The Polar Circles are two small Circles parallel to the Equipollials and diffant therefrom 66 deg. 30 min. and from the Poles of the World. 23 deg. 30 min.

That which is adjacene to the North Pole, is called the Artick Circle

And the other the Antartick Circle, as K d M.

The Zenith and Nadir are two Points diametrically opposite.

The Zenith is the Vertical Point, of the Point right over our Heads, as Z.

The Nadir is directly opposite thereto, as N.

The Azimuth or Vertical Circles, are great Circles of the Sphere, concurring and interfecting each other in the Zenith and Nadir; as Zf N.

The Horizon is a great Circle go deg. distant from the Zenith and Nadir, cutting all Azimuths at Right-Angles, and dividing the World into two equal patts, the Upper and visible Hemisphere, and the Lower and invisible: This Circle is represented by H = R

The Meridian of applace, is that Meridian which passes by the Zeniib

and Nadir of the Place, as PZSN.

The Almicanthers, or Parallels of Altitule, are small Circles, pirallel to the Horizon, imagined to pass through every Degace and Minute

of the Meridian, between the Zenith and Horizon; as BaF.

Parallels of Latitude or Declination, are small Circles, parallel to the Equinottial: They are called Parallels of Declination, in respect of the Sun or Stars in the Heavens; and Parallels of Latitude, in respect to any Place upon the Eatth.

The Latitude of a Place, is the Height of the Pole above the Herizon.

or the Distance between the Zenith and the Equinostial.

The Latitude of a Star, is the Arch of a Circle contained between the Center of a Star, and the Ecliptick Line; this Circle making Right-Angles with the Ecliptick, and counted either Northward or Southward, according to the fituation of the Star,

Longitude on the Earth is measured by an Arch of the Equinodial, contained between the primary Meridian (or Meridian of that Place where Longitude is affigned to begin) and the Meridian of any other Place coun-

ted always Eafterly. Many out of his

The Longitude of a Star is that Part of the Ecliptick which is contained between the Star's Place in the Ecliptick, and the beginning of Aries counting them according to the Succession of the Signs.

Altitude of the Sun or Stars, is the Arch of an A i mush contained be-

twixt the Center of the Sun or Star and the Horizon.

Ascension is the rising of any Star, or any part of the Equinottial above the Horizon, and Descension is the setting thereof.

Right-Ascension is the Number of Degrees and Minutes of the Eggs nodial, (counted from the beginning of Aries) which comets to the Me-

ridian with the Sun or Star, or with any portion of the Beliptick.

Oblique Ascension is an Arch of the Equinodial letyern the beginning

of Aries, and that part of the Equinodial that rifeth with the Center of a Star, or with any portion of the Ecliptick, in an Oblique Sphere.

Oblique Descension is that part of the Equinostial, which sets therewith.

Ascensional Difference is an Arch of the Equinostial, being the Difference between the Right and Oblique Ascension.

The Amplitude of the Sun or Star, is the Distance of the rising or

ferting thereof, from the Fast or West Point of the Horizon.

The Parallax is the Difference between the true and apparent Place of the Sun or Star; so the true Place in respect of Altitude is in the Line ACE, or ADG, the Sun or Star being at C or D. Place 3. Fig. 15.

And the apparent Place in the Line BCF, or BDH.

So the Angles of Parallax are ACB, or ECF; and ADB, or GDH.
In this Scheme, ABK represents a Quadrant on the Earth's Superficies.
A the Center of the Earth. B any Point of the Earth's Surface.

Refraction of the Stars, observed by Tycho. Alt. Ketract. 0° 30' 30" 1 21 30 2 15 30 12 30 4 12 30 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 4 30 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 15 19 0 30 20 8 00		CALLEST AND	Market of the State of the Stat
Alt. Ketract. 0° 30' 30" 1 21 30 2 15 30 12 30 4 12 30 6 9 00 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	Refracti	on of th	e Stars,
Alt. Ketract. 0° 30' 30" 1 21 30 2 15 30 12 30 4 12 30 6 9 00 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	observe	ed by T	vcho.
0° 30′ 30″ 21 30 2 15 30 13 12 30 4 11 00 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15		AND THE RESERVE AND THE	
21 30 2 15 30 12 30 4 11 00 5 10 60 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	AH.		
21 30 2 15 30 12 30 4 11 00 5 10 60 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	00	201	2011
2 15 30 12 30 11 00 10 00 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15			
12 4 30 15 30 10 00 6 9 00 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15			
4 11 00 10 00 10 00 15 6 00 10 10 10 10 12 4 30 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15 15 15 15 15 15	2	15	30
4 11 00 10 00 10 00 15 6 00 10 10 10 10 12 4 30 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15 15 15 15 15 15	202	120	30
10 00 6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 6 16 2 30 17 2 00 18 1 15	4		
6 9 00 7 8 15 8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15		CARL COLOR OF THE PARTY OF THE	
7 8 15 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15		10	60
7 8 15 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	6	9.	00
8 6 45 9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15		NE SE	
9 6 00 10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	ole par		翻出。
10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	0	STATE OF ALL STATES AND ASSESSED.	45
10 5 30 11 5 00 12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	9	-6	00
11	10	5	
12 4 30 13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	CONTRACTOR OF THE PARTY OF THE	建筑的产业	
13 4 00 14 3 30 15 3 00 16 2 30 17 2 00 18 1 15	TOP TO A STREET SHOOT OF		
15 3 00 6 16 2 30 17 2 00 18 1 15	12	4	30
15 3 00 6 16 2 30 17 2 00 18 1 15	12	4	00
15 3 00 6 16 2 30 17 2 00 18 1 15		1	SECTION THE LIBER HOSTING
16 2 30 17 2 00 18 1 15			WINDOWS CONTROL OF THE PARTY OF
17 2 00 1 18 1 15	0		Beltstanson commencers are no
_ 18 1 15 .	16	2	30
_ 18 1 15 .	17		00
			Difference of the Control of the Con
20 9 99			47
20 L 9 90	19	9	39
	20	1.0	90

The Refraction is caused by the Atmofabere, or Vapourous Thickness of the Air near the Earth's Superficies, whereby the Sun and Stars seem always to rise sooner, and set later than really they do.

or the illevision, between the Zenich and Horizan relation, which or Day mation, we finally become in the part called Landely of Declar

In the Latitude of 55 degrees, and there abouts, it is allowed to be as follows in the Table, although it varies by the Weather.

And in the more Northern Parts it hath been observed to be greater:

The Use whereof is this;

Suppose the Altitude observed were 10 degrees; the Correspondent Refraction is 5 min. 30 seconds, which subtracted from 10 deg. the Remainder 9 deg. 54 min. 30 seconds, is the true Altitude.

A me of the sale to survivo

The Doctrine of the Sphere.

SECT. II. Aftronomical Problems.

PROBLEM L

HE Sun's Place in the Eoliptick, and greatest Declination being

given, to find his present Declination.

Example 1. The Sun's Place being in 36 degrees 41 minutes of Taurus, and his greatest Declination, or the Angle of the Ecliptick with the Equinostial, 23 degrees 30 minutes; to find his present Declination.

In the Right-angle Spherical Triangle v BC, there is given v C the Hypotenuse 56 degrees 41 minutes, the Sun's distance from Aries, and the Angle B v C, the greatest Declination (by the 9th Case) to find the opposite Leg, BC, the Sun's present Declination.

Therefore the Proportion and Operation is ;

As Radius ———	Log	. 10.00000
To f. B r C 23° 30	, the Sun's greatest declinat, the Sun's distance from γ	9.60070
50 IS 1. T C 56 41	, the Sun's distance from γ ———	- 9.92202
To 1. BC — 19 28	, the present Declination N	29.52272

Note; That the Sun's distance is always accounted from the nearest of the Equinoctial Points Aries or Libra: Therefore if the Sun be in the Northern Signs, Aries, Taurus, or Gemini; or in the Southern Signs, Capricornus, Aquarius, or Pisces, his distance is computed from Aries.

But if his Place be in the Northern Signs, Cancer, Leo, or Virgo, or in the Southern Signs Libra, Scorpio, or Sagistarius, 'tis reckoned from Libra.

If the Sun be in the Northern Signs, his Declination is Northerly; if the Southern Signs, Southerly,

Example 2. The Sun's Place is 22° 12' of Aquarius, his greatest Declination (as before) 23° 30'; to find his present Declination.

Plate 3. Fig. 16.

The Sun's Distance from Aries, is 37 deg. 48 min.

The Operation. In the Right-angled Triangle v DF.

As Radius	Log. 10.00000
Tof DYF 220	Log roongoo
Sois C or F-27	8 the Digard Control - 9.60070
	the Dillance from Aries 72770
10 1. Dr 14 0	8, the present Declination S

The Dearine of the Sphere.

You may find the Sun's Place by the Tables in Aftronomia Carolina. PROB. II. The Sun's Place given, to find his Right-Ascention.

Note; The Sun's greatest Declination is concluded by Mr. Street, in his Caroline Tables, to be 23° 301, therefore it is always given.

Example 1. The Sun's Place is 26° 41' of Taurus

Plate 2. Fig. 15. To find the Right Ascension.

In the Right-angled Triangle & BC, there is given the Hypotenuse

TC 56 deg. 41 min, the San's place from Aries

The Argle B r C, 23 deg. 30 min: the greatest Declination, (by the 6th Case) to find the adjacent Leg Y B, the Right-Ascension.

The Operation.

As Radius	Log. 10.00000
	10.18224
So is sc. B YC 23 30, the greatest Declination,	9.962:0
To t. Y B 54 22, the Right-Ascen. from Y -	10.:4464
Example 2. The Sun's Place is 22° 12' of Aquarius	101
To find the Right-Ascension.	Plate 3. Fig. 16.

The Operation.

In the Right-angle! Triangle v DF.

As Radius	The state of the s	
Tr. YF-37° 4	8', the Sun's Long. from ~ 9.88928	
	o, the greatest Declination ————————————————————————————————————	
10 to T-D-35 2	next Equinoctial Point \$ 29.85199	S. Contraction

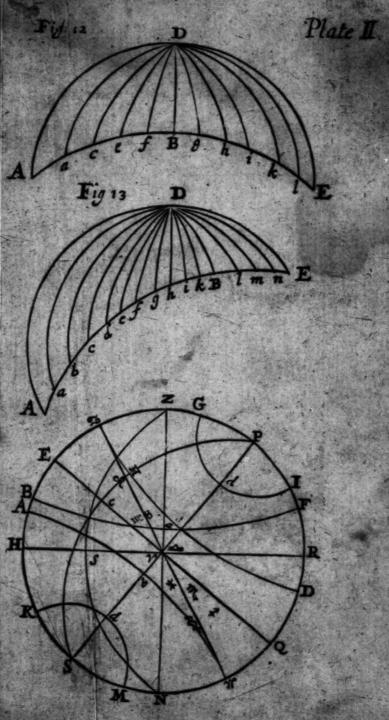
This Proportion finds the Right-Alcention from the nearest EquinoStial Point; as you account the Longitude in the Operation. But the Right-Ascention is to be reckoned from Aries, according to the Succession of the Signs.

Therefore in this last Example, the Complement of 35° 25' to 360,

which is 324° 35', ris the Right-Afcention fought and

PROB. III. The Sun's Declination given, to find his Place or Longi-

Example 1. The Sun's Declination is 19° 30' North, encreasing. To find his Place. no land soll flottorn oil . To Plate 3. Fig. 16. to ist wife at all the Differentions device



F10: 14.

In the Right angled Triangle Y B C.
There is given the Leg BC 19 d. 30 m. the Sun's present Declination.
The opposite Angle B T C 23 deg. 20 min, the greatest Declination.
And the Hypotenuse & C required (by the tenth Case) being the Sun's
Distance from Aries or Libra.
The Operation,
As f. B Y C - 23° 30', the greatest Declination Log. 9. 60070
公司,但是一个大学的,我们就是一个大学的,我们就是一个人的,我们就是一个人的,我们就是一个人的,我们就是一个人的,我们就是一个人的,我们就是一个人的,我们就是一
2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
So is f. B C 19 30, the present Declination 9. 52349
To f. r C 56 50
Which 56 50 reduced into Signs, is 1°. 36° 50',
or 26 50 of Taurus.
If the Sun's Declination be North, and encreasing, this Proportion
finds the Sun's Distance from Aries; if decreasing, from Libra; in the
Northern Signs.
If the Sun's Declination be South, and encreasing, from Libra; if
decreasing, from Aries, among the Southern Signs.
Example 2. The Sun's Declination is 14° 10' South decreasing. To find the Longitude from Aries. Place 3. Fig. 16.
To find the Longitude from Aries. Place 2. Fig. 16.
The Operation. In the Triangle Y DF.
As f. D r F 23° 301, the greatest Declination9.60070
To Radius————————————————————————————————————
So is C DE the prefent Declination
So is f. DF 14 10, the present Declination 9.38871
To f. Y.F. 37 52, the distance from Aries 9.78801
The Compl. of 37 deg. 52 min. to 360 deg. is 322 deg. 08. min. Which reduced into Signs, 10° 22° 81, or 22° 81 of Aquarius.
Which reduced into Signs, 10° 22° 87, of 22° 8 of Aquarius.
PROB. IV. The Sun's Declination given, to find the Right-Alcention.
Example 1. The Sun's Declin. is 19 d, 30 m. North encreasing.
一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
In the Right angled Triangle A RC 101113511 7000
There is given the Leg BC 19° 30', the Sun's present Declination. And the opposite Angle B r C 23° 30', the greatest Declination. (by the 1st Case) to find the Leg r B, the Right-Ascention.
And the opposite Angle B Y C 22 20, the greatest Declination
(by the ra Cafe) to find the Lev Y B the Right A Cention
As Radius In occord
To tc. BYC23° 30', the greatest Declination
So in PC
So is t. BC 19 30, the present Declination—9.54915
To f. Y B -54 32, the Right Ascention, from Y -19.91085

The same Caution which was given for the right accounting the Sun's Place in the third Problem, serves for the Right Ascention; only

The Wourine of the Sphere.

as that was given in Signs, Degrees and Minutes, this must be given in Degrees and Minutes from Aries.

Example 2. The Sun's Declin. is 14d. 10m. South decreasing.

To find the Right-Ascension.

Plate 3. Fig. 16.

The Operation.
In the Right angled Triangle " DF.

PROB. V. The Latitude of a Place, and the Sun's Declination being given, to find the Ascentional Difference.

Example. In the Latitude 51 deg. 32 min. the Sun's Declination being 20 deg. 12 min. to find the Ascentional Difference.

In the Right-angled Triangle abc.

Plate 3. Fig. 17.

There is given the Leg bc 20 deg. 12 min, the Sun's Declination and the opposite Angle bac 38 deg. 28 min. the Compl. of the Latitude, or the Angle between the Equinoctial and Horizon (by the first Case) to find the other Leg ab, the Ascensional Difference.

The Operation.

Log. 10. 00000

To tc. bac 38° 28' the Compl. of the Lat.

So is t. bc-20 12, the Declination

To f. ab—27 35, the Ascentional Difference

29.66567

PROB. VI. To find the Oblique Ascension or Descension.

First, Find the Ascensional Difference by the fifth Problem, and the

Right-Ascension by the sourth Problem.

Secondly, If the Sun's Declination be Northerly, the Ascensional Difference substracted from the Right Ascension leaves the Oblique Ascension, and added to the Right Ascension, gives the Oblique Descen-

Thirdly, If the Sun's Declination be Southerly, the Ascensional Difference added to the Right Ascension, gives the Oblique Ascension; and

Note; If the Right Ascension be less than the Ascensional Difference, add 360 deg. to the Right Ascension and then subtract it therefrom; or if the Sam of the Right Ascension and Ascensional Difference, exceeds

The Patrine of the Otherer

ceeds 360 deg. reject 360 deg. the Remainder is the Oblique Ascension or Descension required.

PROB. VII. To find the Time of the Sun's Rifing or Setting; and

confequently the length of the Day or Night.

First, Find the Ascensional Difference by the fifth Problem, which reduced into hours and minutes of Time, by allowing for every 15 deg. one hour, and for every degree less than 15, 4 min. of Time, and for every 15 min. one minute of Time.

Secondly, If the Sun's Declination be Northerly, the Ascensional

Difference added to fix hours, gives the Time of Sun-festing. And subtracted therefrom, leaves the Time of Sun-rifing.

On the contrary, If the Sun's Declination be Southerly, the Afcenfional Difference added to fix hours, gives the time of Sun-rifing, and Subtracted therefrom, the Time of Sun-fetting.

Thirdly, If you double the Time of Sunfetting, it gives you the Length of the Day: And the Time of Sun rife doubled, the Length

of the Night.

Example 1. In the Latitude 51 deg. 12 min. North, the Sun's De-

clination 20 deg. 12 min. North.

And the Ascensional Difference by the fifth Problem is 27 degrees as minutes, which reduced into Time, makes I hour so minutes.

Production of the second	the same of the same of the same	SECTION AND SECTION	110	. mm.
Therefore the	he Time of S	un-lettine i	S 7	CO
The Time of	F Cum pifine	un courtain	9 1	20
			4	10
The Length	of the Day		19 19 19 14 4	40
The Length	of the Nich	WE TO ROTH	STUDE TO	car Assat
THE TENETH	OI THE TAIRD			20

Example 2. In the Latitude 51 deg. 32 min. the Declination 20. deg. 12 min. South.

And the Ascensional Difference is 27 deg. 35 min. which makes, (as before) 1 hour 50 minutes of Time.

The Time of Sun-rising	7 50
The Time of Sun ferring	4 10
The Length of the Day	8 20
The Length of the Night	15 40

PROB. VIII. The Latitude of a Place, and the Sun's Declination being given to find the Sun's Amplitude.

Example. In the Latitude 71 deg. 32 min. the Sun's Declination being

20 deg. 12 min. to find the Amplitude.

In the Right-angled Triangle abc, there is given the Leg bc 20 deg.

min. and the opposite Angle bac, 38 deg. 28 min. (by the tenthe Case) to find the Hypotenuse ac the Amplitude. Place 3. Fig. 17.

The Operation.

As f. bac 38° 28' the Compl. of the Lat.

To Radius

To Radius

To Radius

To Radius

10,00000

So is f. bc 20 12, the Declination

9.53819

To f. ac 33 43, the Amplitude

9.74436

If the Sun's Declination be Northerly, the Amplitude is to the

Northward of the East or West; if the Declination be Southerly, tothe Southward.

PROB. IX. The Latitude of a Place, and the Sun's Declination being

given, to find what time the Sun shall be due East or West.

Example. In the Latitude 15 deg. 32 min. North. the Sun's Declination 20 deg. 12 min. North.

To find what time the Sun shall be due East or West.

In the Right-angled Triangle ade, there is given the Leg de 20 deg.

12 min. and the opposite Angle dae, 51 deg. 32 min. (by the first Case) to find the Leg ae, the Time from fix

Plate 3. Fig. 17.

The Operation.

Which being reduced into Time, makes one hour eight minutes ferd, which added to fix hours, gives 7 hours and 8 minutes, at which time the Sun comes to the East; and subtracted from fix hours, leaves four hours 52 minutes, the time of his being in the West Azimuth, or Prime Vertical.

PROB. X. The Latitude of the Place, and the Sun's Declination. being given, to find the Sun's Latitude, being in the East or West

Azimuth, or Prime Vertical.

Example. In the Latitude 51 deg. 32 min. North, the Declination 20 degrees 12 minutes North, to find the Sun's Altitude, being due East or West.

In the Right-angled Triangle ade, there is given the Leg de 20° 12', and the opposite Angle dae 51 deg. 32 min. (by the tenth Case) to find the Hypotenuse ad.

Plate 3. Fig. 17.

est the course of the name of the action of the

The Operation.	
As fe dae 151° 32' the Latitude	9.89374
To Radius	10,00000
So is f. de 20 12, the Declination	9.52810
To f. ad 26 10, the Alt. in the Prime Vertical—PROB. XI. The Latitude of a Place, and the Sun's	THE RESERVE OF MARKET PARTY.
ing given, to find the Sun's Altitude at Six of the Clo	Decimation of-
Example. In the Latitude 51 deg. 22 min. North.	the Declination
23 deg. 30 min. North, to find the Sun's Altitude at fix	
In the Right-angled Triangle abc, there is given the	Hypotenuse ac,
23 deg. 30 min. and the Angle bac, 51 deg. 32 min.	
Case to find the opposite Leg. bc. The Operation.	ne 3. Fig. 18.
As Radius	Log. 10.00000
To f. ac. 23° 30' the Declination————————————————————————————————————	9.60070
So is f. bac 51 32, the Latitude	9.89374
To f. bc 18 11, the Altitude at fix	29.49444
PROB. XII. The Latitude of a Place, and the Sun's I	Declination, be-
ing given, to find the Azimuth at fix.	9
Example. In the Latitude 51 deg. 32 min. North, to 23 deg. 30 min. North, to find the Sun's Asimuth at fix	ne Declination.
In the Right-angled Triangle abc, there is given the	Of the Clock.
23 deg. 30 min. and the Angle bac, 51 deg-32 min. (by	the first Cafe
to find the adjacent Lee labe or	E manual and the second
A. D Movi on the Operation (Marick &	No. of Party and Control of the Cont
As Radius	Log. 10.00000
To t. ac 23° 30' the Declination	9.63830
So is fc. bac c1 32, the Latitude	9.79383
PROB. XIII. The Latitude of the Place, the Sun's	- 79.43213 ··
PROB XIII. The Latitude of the Place, the Sun's	s. Altitude and
Declination being given, to find his Azimuth.	Dudinarion or
Example 1. In the Latitude 51 deg. 32 min. North, th	e. Declination
23 deg. 30 min. North, the Altitude 49 deg. 40 min. To	mid the suns
In the Oblique angled Triangle DPZ, there is given the ZP 38° 28', the Compl. of the Latit. PD 66° 30', the	e three Sides
ZP 28° 28' the Compl. of the Latit. PD 66° 30' tl	ne Compl. of
the Declination, or the Sun's Distance from the elevated	Pole, and DZ
40° 20% the Compl. of the Altitude, (by the 11th Cafe) to find the
Angle DZP, the Sun's Azimuth from the North. Plate	3. Fig. 18.
	A Charles

Operation.

Logs CZP 38 28 Sine	
TheBafeDP 66 30 Sum 72° 39' Sine Lo	9.97978
Sum—145 18 Rem: 06 00 Sine—	9.02992 Sum 79.40487
Rem. — 06 09 fc. — 59 44 — Which doubled, — 59 44 prod	3 Sum, 9.60240

The Sun's Azimuth----119 28 from the North.

Example 2. In the Lat. 31° 52' North, the Sun's Declin. is 15° 16' South, and his Altit. 19° 37'; To find his Azimuth from the North.

Plate 4. Fig. 19.

Operation.

Examp. 3. In the Lat. 51° 32' South, the Sun's Declin. 23° 30' South,

and his Altitude 49° 40': To find his Azimuth from the South.

In the Triangle DPZ, P must represent the South Pole; then there is given PZ 38 deg. 28 min. the Compl. of the Latit. DZ 40 d. 20 m. the Compl. of the Altitude; PD 66 deg. 30 min. the Compl. of the Declination, or the Sun's Distance from the elevated (or South) Pole; to find PZD, the Sun's Asimuth from the South. Plate 2. Fig. 18.

The Operation is the same with the first Example; only as the Azi-

part of the Horizon, which is 119 deg. 28 min.

Example 4. In the Lat. 51 deg. 32 min. South, the Sun's Declination is 15 deg. 16 min. North, and the Altitude 19 deg. 37 min. to find his Azimurb from the South,

Plate 4. Fig. 19.

In the Triangle DPZ, P reprefents the South Pole, as in the former Example.

Then there is given PZ 38 deg. 28 min. DZ 70 deg. 23. min. PD

105 deg. 16 min. and DZP required.

2001

The Operation is the same with the second Example, only the Azimuth found is to be accounted from the South, which will be found 153 deg. 58 min.

PROB. XIV. The Latitude of the Place, the Sun's Declination

and Altitude being given, to find the Hour of the Day.

Example 1. In the Latit. 51° 32' North, the Sun's Declin. is 23° 301

North, and his Altitude 49° 401, to find the Hour from Noon.

In the Triangle DPZ, there is given PZ 38 deg. 28 min. DZ 40 deg. 20 min. DP 66 deg. 30 min. and DPZ the hour from Noon required.

Place 3. Fig. 18.

0.01		The O	peration.	6.00	
The 7 DP	660	201 Sine		SETTE STOCKED AND ADDRESS OF THE RESERVE AND ADDRESS OF THE PERSON OF TH	. Ar. 003760
Legs SPZ_		28 Sine			e. Ar. 0.20617
The Base DZ	40	20 1 Sum	72° 391		Log. 9.97978
Sum-					9. 72683
- Sum	-72	39-11-1	divisor off	Sun	1-29.95038
Rem	-32	13 Sc. 1	49 21 sdi	18. 4 Sum	
he Double of	19 d	E. II M	n. is 38 18	eg: 22 min.	which heing

The Double of 19 deg. 11 min. is 38 deg. 22 min. which being reduced into Time, gives 2 hours 33 min. from Noon; so that the hour of the day is either 2 hours 33 min. Afternoon, or 9 hours 27 min. before Noon.

Example 2. In the Latit. 51° 32's North, the Sun's Declin, 15° 161's South, and his Alut. 19° 37', to find the Hour P. M. or Afternoon.

In the Triangle DPZ, there is given the three Sides, PZ 389 284, DZ 70° 23', PD 105° 16', and DPZ required.

Plate 4 Fig. 19

def. Santin	The Operation 2 3	boauber . No VI
Legs SPZ	8º28 Sine n di ese geb	101 Ca. Ar. 0.20167
The Base DZ 7	6 23 3 Sum 107 103 till	Log. 9.98048
TO SECURE FOR THE OWNER OF THE PARTY OF THE	4 07 Rem. 36 40	9.77609
Rem	6 40 Sc. 12 44	29.97834 9.98917

Which doubled, produces 25 deg. 28 min. and that reduced into Time, makes 1 hour 42 min. ferd.

PROB. XV. The Latitude of a Place, the Sun's Declination, and the Hour of the Day given, to find the Sun's Altitude.

Example.

Example. In the Lan 51 deg. 32 min. North, the Sun's Declination is 23 deg. 30 min. North; the Hour, 1 Hour 53 min. Afternoon. To find the Sun's Altitude.

1 Hour 53 Minutes reduced, makes 28 degrees 15 minutes.

In the Triangle DPZ, there is given the two Sides, PZ 38 deg. 28 min. DP 66 deg. 30 min. and the contained Angle DPZ 28 deg. 15 min. and the third Side DZ required.

The Operation.	March 1 and
As Radius	Log. 10.00000
To fc. DPZ 28° 15' the contained Angle-	9.94492
So is t. PZ 38 28 the leffer Side	
To	29.84501
From the other Side PD 66°	ol 9TV setT
Subtract the fourth Arch——34	9. 454 Cents
The Remainder is the Refidual Arch 31	II ACIDICALE
	Co. Ar.
As fc 34 59 the fourth Arch	0.08655
To fc 31 31 the Refidual Arch	9.93069
So is fc. PZ-38 28 the leffer Side-	
To fc. DZ-35 27 the Side fought-	
Whose Compl. 54 degrees 33 minutes is the Alt	itude required. 10 1001
PROB. XVI. The Latitude of a Place, the Si	un's Declination and

the hour given, to find the Sun's Azimuth.

Example. In the Latitude or degrees 32 minutes North, the Sun's Declination is 15 degrees 16 minutes South, and the hour, 10 hours 18 minutes in the Morning; to find the Sun's Azimuth.

The Time from Noon is 1 hour, 42 minutes, Which reduced, is 25 degrees 30 minutes.

odni the Triangle DPZ, there is given the two Sides PZ 38 degrees 28 minutes, PD 105 degrees 16 minutes, and the contained Angle DPZ 25 degrees 30 minutes, to find one of the opposite Angles, viz. Plate 4. Fig. 19. PZD.

The Operation.

41 30 0000 01-105 h 16 ain les gib des emilieres 44 5um 71° 32' 2 DPZ 48 Diff. 32 24 Sthe half 12 45

A.C. 7 ST. D. Since The last of the case o	Go. Ar.
As f. Z cr. DP and PZ 71 52	-0.02212
101. 5 A CI.	-9.74074
30 IS IC. 3 DF 2	-10.64426
Tot. X Ls PDZ and PZD 68 39	10.40822
。在1900年中的1900年中,1900年代,1920年代,1920年代,1920年代,1920年代,1920年代,1920年代,1920年代,1920年代,1920年代	Co An
As Co. Z cr. DP and PZ	-0.50602
10 IC. 3 A CI	-0.02160
So is tc. : DZP	-0.64426
Tot. Z Ls PDZ and PZD-85 10-	11.07280
3 Z Ls 85° 10'	AT LAND
X 4s 68 39	506 - 12
Sum 153 49 DZP required.	That Toke
Which is the Sun's Azimuth from the North.	in serim

PROB. XVII. The Latitude of a Place, the Sun's Attitude, and A-

zimuth given to find the Hour.

Example. In the Latitude 51 degrees 32 minutes, the Sun's Altitude 49 degrees 40 minutes, his Azimuth 119 degrees 44 minutes from the North; to find the Hour Afternoon.

In the Triangle DPZ, there is given the two Sides DZ 40 deg. 20 min. PZ 38 deg. 28 min. and the contained Angle DZP, 219 deg. 44 min, and the opposite Angle DPZ required.

The Operation.	
DZ 40 20	14、1910更高
PZ 18 28	it area units
Sum 78 48 5 Sum 39° 24' 7 DZP 119° 44	4.25 H 030H
Diff. 01 52 5 Diff. 00 36 I the half 59 52	Co. Ar.
Asf. Zcr. DZ and PZ	0.19747
To f. (X cr 00 56	8.21189
So is to: DZP	0.76277
To t. X Ls PDZ and DPZ	28 07 107
	Co. Ar.
As fc. = Z cr. DZ and PZ 39 24	-0.T1F97
[1] [1] [1] [1] [1] [1] [1] [1] [1] [1]	9.99994
So is tc. DZP	9.99994
Tot. Z Ls PDZ and DPZ-36 54	91/03/
17 /s 260 std	-29.87568
1 X Ls 00 SI	
。 一种,我们就是一种,我们就是一种,我们就是一种,我们就是一种,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人, 一种人,一种人,一种人,一种人,一种人,一种人,一种人,一种人,一种人,一种人,	
Sum : 37 45 DPZ required.	
。	CONTRACTOR OF THE PARTY OF THE

18118

Note; DPZ is the greater Angle, because opposite to the greater. Side DZ; 37 deg. 45 min. reduced, makes the Time 2 hours 31 min. Afternoon.

PROB. XVIII. The Latitude and Longitude of a fixed Star being

given, to find the Right Afcention and Declination.

Example. The Longitude of Caftor is 15 deg. 33 min. of Cancer, and his Latitude 10 deg. 02 min. North; to find his Right-Ascension and Declination.

In the Oblique Triangle DIP, there is given two Sides, IP 23 deg. 30 min. the distance between the Pole of the Equinoctial, and the Pole of the Ecliptick; ID 79 deg. 58 min. the Complement of the Latitude; and the contained Angle DIP 15 deg. 33 min. the Longitude from Cancer: To find one of the opposite Angles DPI, the Complement to 180 deg. of the Right-Ascension from Cancer; and the third Side DP, the Complement of Declination.

Plate 4. Eig. 20.

The Operation.: For the Right-Ascension.	
1D1 79° 78'	and a majerial Children
IP 23 30	
	1
(1) 13 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Co. Ar.
	0.105061
接着数据数据数据 "全国的基础是是一个大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大大	医乳球腺素素 医多种性 医多种性 医多种性 医多种性 医
	9.64548
So is tc. 1 DIP	
To t. X Ls DPI and IDP-76. 22-	10.61571.
	Co. Ar.
As fc. \ Z cr. ID and IP 51 44-	
To ic. X ci 26 14	
So is tc. : DIP 07 46	
To t. 1. Z Ls DPI and IDP 84 37	The state of the s
	11.02008.
	THE PART OF LAND
3 X, Ls 76 22	
Sum 160_ 59 DPI.	

Whose Complement to 180 degrees is 19 degrees I minute, the Bigbt-Ascension from Cancer; the Right-Ascension of Cancer is 90 degrees; and therefore the Right-Ascension from Aries is 19 degrees I minute.

为自己的表现了,我们就是多数是否是对这种的。但是不是一种,我们就有了多数的。但是这种的是是这种是多数的对抗的,我们就是这种的现在是是这种的,我们就是这种的,他们	机砂锅等为加强铁板堆。 思想的,如果这
The Court of the C	Co. Ac.
As f. DPI 160 59 the Compl. of the Right-Ascention	0.48700
To f. DI 79 58 the Complement of the Latitude	999331
So is f. DIP 15 33 the Longitude from Cancer -	9.42826
To f. DP 54 6 the Complement of the Declination	9.90857
Whose Compl. 3,5° 54' is the Declination Northerly.	319 40 NO
PROB. XIX. The Right-Ascension and Declination of	a fixed Stat
being given, to find the Longitude and Latitude thereof.	The state of the s
Example. The Right-Afcention of Castor is 18° 15', an	d his Dech-
nation 32° 32' North; to find his Longitude and Latitud	EL DE DE
In the Triangle IDP, there is given the two Sides, IP : 57° 28', and the contained Angle DPI 161° 45', to find	23 30'; FD
Angle DIP, and the third Side DI.	the opponie
. The Operation. To find the Longitud	Fig. 20.
PD 57-28	
IP 23 30	
Diff. 33 18 Diff. 16 59 5 DPI 80	52
	Co. Ar.
As f. 3 Z cra. PD and IP-40 29-	-0.18760
To f. \(\frac{1}{2}\) X ct^2. \(-\frac{16}{59} \) So is tc. \(\frac{1}{2}\) DPI \(-\frac{16}{59} \)	9.46552
2、17、10年 10.3 10.3 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	9.20621
To t. 3 X Ls DIP and IPD 04 08	-2885933
0 1	Co. Ar.
As fc. 2 Z cr. PD and IP40 29	-0.11885
To fc. \(\frac{1}{2}\) X cr2. \(- 9.98063
2. 一点,不是一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	-9.2062T
To t. Z Ls DIP and IDP-11 25	-29.30569
1 Z Ls 11° 25'	6.30年的
X 4s: 04 08	AND THE SECOND
Sum 15 33 DIP the Longitude from Cancer.	A sala alm
To find the Latitude. With the	Co. Ar.
As DIP 15. 33 the Longitude from Cancer.	
To f. DP 57 28 the Complement of Declination-	-9.92587
Sois f. DPI 161 45 the Compl. of the Right-Ascention-	-9.49577
To f. DI 80 or the Complement of Laritude	SEASON STATES OF THE PROPERTY
M 2	PHUR

84

PROB. XX. The distance of a Planer, Comet, or New Star, from two known fixed Stars being given, to find the unknown Star's Longitude and Latitude.

Example; The unknown Star's distance from the Swan's Beak is 49 degrees of minutes, and from Perfeus's Side 88 degrees 57 minutes, to

and the Longitude and Latitude thereof.

Long. 3 Of the Swan's Beak, # 26° 39' Lat. {49° 02' N. 40° 05 N.

r. In the Triangle ADI there is given two Sides, AI 40 deg. 58 min. the Compl. Lat. of the Swan's Beak, DI 59 deg. 55 min. the Compl. Lat. of Perseus's Side, the contained Angle AID 120 deg. 33 min. the difference of Longitude between the two Stars, and the Angle DAI, and the Side AD required.

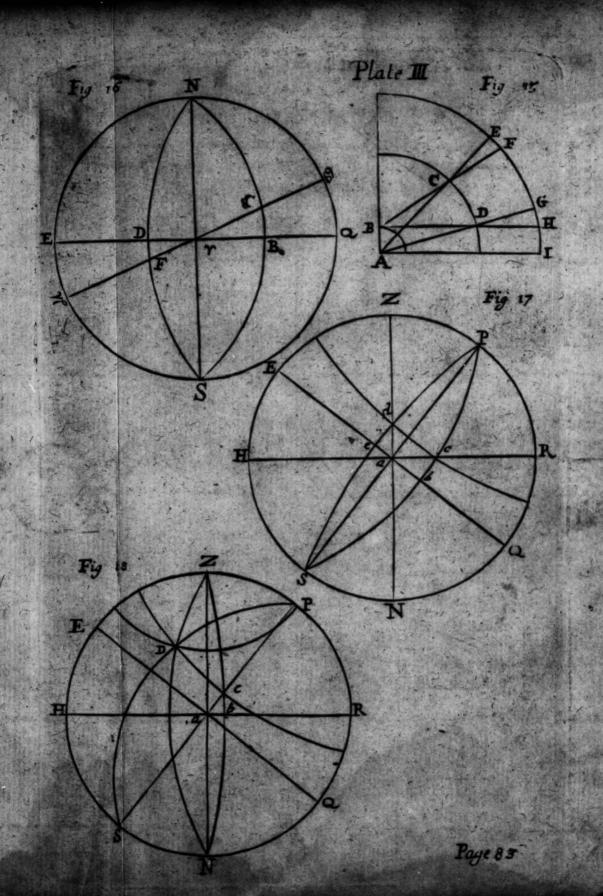
Plate 4. Fig. 21.

The Operation.

the adoption of a box of	Co. Ar-
As f. Z cra. Al and DI50	26 0.11301
To f. + X cra	28
	16
Tot, X 4s DAI and ADI 06	
	Co. Ar.
As fc. 3 Z cro. Al and DI 10	26
To fc. 1 X cr09	28
So is tc AID	16-9.75676
Tot. 2 Z Ls DAI and ADI-41	29
The Angle DAI is 48	ALXI DUS NOTAL ZEE OF OT
	Co. Ar.
As f. DAI48	25 0.12610
To f. DI	559.93716
So is AID	33
To f. AD85	79.99636
Mark State of the Control of the Con	

2. In the Triangle ADB there is given three Sides, AD 85 deg. 02 min. the distance between two known Stars, AB 49 deg. 05 min. the unknown Stars distance from the Swan's Beak, BD 88 deg. 57 min. the distance from Perseus's Side, and the Angle DAB required.

Plate 4. Eig. 21:



The Operation

		Encessamente		闘
AD-	85 02	Sine-	-Co. At. 0.00163	
AB	49 05	Sine-	-Co. At 0.12167	
AD-	88 57	! Sum 1110 32/	Sine 9.96858	
Sum	CONTROL OF THE PROPERTY OF THE	Remi ande	Sine 9.58436	100
	- FY 316	mer of the nime	-Sum 29.67624	
Rein.	camin SQA35	JC. 46 28	Sum 9.83812	

Which being added to the Angle DAI, the Sum is the Angle BAI

par deg. 21 min.

3. In the Triangle ABI there is given the two Sides, AI 40 deg. 38 min. AB 49 deg. or min. the contained Angle BAI, 141 deg. 21 min. and the Angle AIB, the difference of Longitude between the unknown Star, and the Swan's Beak, and the Side BI, the Compl. of the unknown Star's Latitude required.

Plate 4. Fig. 21.

Sept 5 6 4 10 10 10 10 10 10 10 10 10 10 10 10 10	The	Operation. ald La	19r	per la
As f. Zera. All and AB		oI		Co. Ar.
	-70	40 07	ut a fixed of	-8.84897 -9.54512
To t. X & ABI and AIB As fc. Z cr. AI and AB-	HUNGH	Sens) with the		Co. Ar.
To fc. \(\frac{1}{2}\) X ct.\(\frac{1}{2}\) So is tc.\(\frac{1}{2}\) BAI	-04	03	1.33011	-9.99891 -9.54512
To t. 1 Z Ls ABI and AII The Angle AIB is 28 deg.	3-52 20 m	in which added	to the Lor	29.69467 girade of
the Swans's Beak, w 26 deg	MARKET LA	hin. makes the u	0. 10.10.0	Co. Ar.
As f. AIB28° To f. AB49 So is f. BAI141	20'-	statistical entrical same for the same and t	un mario	-0.32367 -9.8783
To f. Bl	57	in Single Single	0). 00 20	29-99757
Whose Compl. to 90 der Stars Latitude Northerly.	MARK T	L. College LA	1111	Tanna H

PROB. XXI. The Meridian Attitude of an unknown Star of Planes, and the Distance from a known fixed Star being given, to find the unknown Star's Latitude and Longitude.

Example

Example, in the Latitude 51 deg. 32 min. North, the Meridian Altitude of an unknown Star is 30 deg. 36 min. and his Distance from the Star in Cepheus's Girdle is 84 deg. 32 min. to find his Longit. and Latit.

The Meridian Altitude of the Star being given, his Declination is

alfo given.

For the Meridian Altitude subtracted from the Complement of the Latitude 38 deg. 28 min, there remains 7 deg. 52 min, the Declinati-

on South.

First, Therefore in the Triangle AOP, there is given the three Sides, OP 20 deg, 52 min. the known Star's Distance from the North Pole; AP 97 deg. 52 min. the unknown Star's Distance therefrom, AO 84 deg. 32 min. the Distance between the two Stars, and the Angle APO required, being the Difference of Right-Ascension between the two Stars.

Plate 5. Fig. 22.

OP 2	o° 52'Sine————	Co. Ar. 0.44831
	7 52 Sine	Co. Ar. 0.00411
Sum To	r 38 Sine	9.99098
Rem. 9	7 06	
Condian Comm		Sum 19.91181
Sc	5. 23	Sum 9.95590

Which doubled is 50 deg. 46 min. the Angled APO.

The Right-Ascension of Cepheus's Girdle is 321 deg. 02 min. to which adding 50 deg. 46 min. (the unknown Star being to the Eastward of the unknown Star) produceth the Right-Ascension of the un-

known Star 11 deg. 48 min.

Secondly, Then having the unknown Star's Right Ascension and Declination, you may find his Longitude and Latitude by Problem 19.

PROB. XXII. Having the Latit. of the Place, the Sun's Right Ascenfion, and the Alt. of a known fixed Star; to find the Hour of the Night.

Example. In the Latitude 51 deg. 32 min. the Sun's Right Ascenfion being 228 deg. 45 min. and the Altitude of Aldebaran 38 deg. 58 min. to the Eastward of the Meridian; to find the hour of the Night.

The Right Ascension of Aldebaran is 64 deg. 10 min. and his De-

clination 15 deg. 46 min.

In the Triangle APZ, there is given the three Sides PZ 38 deg. 28 min. the Compl. of the Latitude; AZ 51 deg. 02 min. the Compl. of the Star's Altitude; AP 74 deg. 14 min. the Complement of his Declination; to find the Angle APZ, the difference of Right Ascention between the Medium Cali and Aldebaran. Plate 5. Fig. 23.

1 be

AP Sin		The Opera			MIKELY TO
Sum, Sin	e 81 52-			+315/01 60 E WA	-9.9956
tem. Sin	e 30 50-			A CONTRACTOR OF STATE	9.7097
Sc.	型模式 化焊管管理	approximate the second of	學語。一管發展一時		19.928 -9.9640

Which doubled, produces 45 deg. 48 min.

This subtracted from the Right Ascension of Aldebaran, leaves 18 degrees 12 minutes, the Right Ascension of the Mid-Heaven. Add 360 deg. to 18 deg. 12 min. and from the Sum subtract the Sun's Right Ascension 228 deg. 45 min. the Remainder 149 deg. 27 min. reduced into time, makes 9 hours 57 minutes, 48 seconds, the hour of the Night sought.

PROB. XXIII. Two unequal Altitudes of the Sun taken in one day, with the Time between the Observations, and the Sun's Declination be-

ing given; to find the Latitude of the Place of Observation.

Example. The Two Altitudes are 43 degrees of minutes, and 56 degrees 34 minutes, the Time between the Observations is 2 hours, and the Sun's Declination 20 degrees 14 minutes North; to find the Latitude of the Place Northerly.

In the Right-angled Triangle ABP, there is given the Hypotenuse AP 69 degrees, 46 minutes, the Complement of the Declination, the Angle APB 15 degrees, half the Time between the Observations, and the opposite Leg AB required.

Plate 5. Fig. 24.

As Radius——————		10.00000
To f. APB 15° 00'	Control September 1	-9.41300
To f. AB14 03 Which being doubled, gives AE 28 degrees	The many lights a	- 9.97234 - 19.38534

Secondly, In the Oblique-angled Triangle APE, there is given the two Sides AE 28 degrees of minutes, EP 69 degrees 46 minutes, the opposite Angle APE 30 degrees on minutes, and the other opposite Angle EAP required.

Plate 5: Fig. 24.

in a second of the	The Operation.	. Co. Ar.
As f. AE-28°	087	-0.32697
To f. APE 30	00	9.69897
So is f. EP 69	46	-9.97274
To f. EAP 84	54	-29 99828

Thirdly,

Thirdly, In the Oblique angled Triangle AZE, there is given the three Sides, AZ 33 deg. 26 min. the Complement of the greater Altitude, EZ 46 degrees 54 minutes, the Complement of the leffer AE 28 degrees of minutes, and the Angle EAZ required.

Plate 5. Fig. 24.

a Ministra	The Operation.	A CONTRACTOR OF THE PARTY OF TH
AZ Sine 33	° 26'	Co. Ar. 0.25888
AE. Sine 28	Tutten, thountes as AQ	Co. Ar. 0.32697
Sine Sum, 54	14 gome and Imaginative	Log. 9 90915
Rem. Sine or	19 months from the	9.10501
		Sum, 19,60001
Sc. se		800 0 4 Sum 9.80000

Which doubled, produces EAZ 701 deg. 44 min, from which subtracting EAP 84 deg. 54 min. there remains PAZ 16 deg. 50 min.

Fourthly. In the Oblique-angled Triangle APZ, there is given the two Sides AP 69 deg. 46 min. AZ 23 deg. 26 min. the contained Angle PAZ 16 deg. 50 min. and the third Side PZ required.

salt and a poste en anie ne l'Plate. 5. Fig. 24.

The Operation: Tolling the As Radius--9.98098 To C. PAZ-So is t. AZ-9.81968 29.80066 Tob of a 4th Aich 32 Co. AT. As Ic. of the 4th Arch 32° 0.07293 Tosc. of the Residual 27 9.89956 o is fe. AZ-9.92144 26 . 29.99393 34 is the Latit. Northerly. Whole Compl.---- 51

PROB. XXIV. Two unequal Altitudes of the Sun, and the Diffetence of their Correspondent Azimuths taken in one Day, and the Sun's Declination being given; to find the Latitude of the Place of Observa-

Example. The first Altitude is 43 deg. 6 min. and the second Altitude 56 deg. 34 min. the Difference of Azimuths 39 degrees 16 minutes, and the Sun's Declination is 20 degrees 14 minutes North; to find the Latitude of the Place Northerly.

Sides AZ 33 degrees 26 minutes, EZ 46 degrees 54 minutes, the contained

tained Angle AZE 39 degrees 16 minutes, the difference of the Azimuths; and the Angle EAZ, and the third Side AE required.

416086	1-37 30	Tel. of the Refidu
447. D. C. contrologica - 44	The Comparing	Plate 5. Fig. 24.
As 1. 2 cm. AZ	ind EZ 40° 10'-	Co.: Ar.
10 L ; A CT.		11030.9-
So is tc. ; AZE	19. 38-	10.44765
and the second s	AZ and AEZ-27 00-	29.70719
As fe ! Zero AZ	and EZ	O'.III .TO TO. Ar.
To fc. X cr.	06.44	9.99699
So is tc. AZE	The university of	10.44765
Tot. Z Ls EA	Z and AEZ74 39-	10.56145
DAG C BAT HILL	The Angle EAZ is 1	01° 39 Co. Ar.
To LEZ	Control of the Control of Control	
So is AZE	20 16	Astronomy Revolucio
To f. AE	20 00	40/07/2018
Secondly; In the	Right-angled Triangle ABP	here is given the Hy-
potenuje AP 69 de	g. 46 mm. the Leg. AB 14 de	g. o4 min, the half of
AE, and the adjac	ent Angle Bar nequired with	Place S. Fied VA.
As Dading	vell. morraged sal.	Globe whereon we di
Ins THE LOAD DOING	ago or neibrone daider on	Fo.00000
Soist AR tu	Sold destrict countries and parties	MES SELATION DEFS. 13 CORE
To fc. BAP 84	nay fee in the following sign	OY 25 : 100 M 18.96946
From the Angle	EAZ 101 deg. 39 min. ful	otract the Angle EAP 84
deg. 42 min. there	e remains the Angle PAZ. 16	deg. co mia
Thirdly, In the	Oblique-angled Triangle PAZ	there is given the two
the third Side PZ	AZ 33° 264, the contained A required.	ingle raz to 17, and
		Plate 5. Fig. 24.
21476	The Operation.	

As Radius-10.00000 Tofc. PAZ-571-So is t. AZ-To t. of a fourth Arch-29.80019 Co. Ar.

Dourne of the Southere.

		of ASA signA Con Ar.
As fc. of the fourth Arch		
To fc. of the Refidual-		18 시가 현실 경기는 역시 기업 전혀 이 시간 중요한 것 같습니다. 그 가능한 경기는 기업 경기를 하면 함께 되었다. 그 없는데 그리고 있다.
To C. PZ	-38 28	20.80276
Whofe Compl.	-51 32 is the L	attitude North.
ALCHO CARACTER TA	0	at X 1.10T

SECT. III. Containing the general Astronomical Theories.

The Ptolomaick Syltem.

HE Ptolomaick Syftem is that which was by Ptolomy invented, and Supposeth the Earth to be fixed as the Centre of the World, and that all the Celestial Bodies move round the same in their Digmal and Annual Revolutions.

The World is supposed to be divided principally into two parts.

Elementary and Celestial.

The Elementary admits of four Divisions.

In The fielt is the Earth. at Al . god ont . nim de gob ed Al Danger

The fecond is the Water; both which make one entire Body or Globe whereon we dwell. A diagram of 1

The Third is the Air, encompassing the Earth.

And the fourth is Fire, which according to the Opinion of antient Philosophers, is contained in that space between the Air and the Sphere of the Moon; as you may fee in the following Figure.

deg. a vinim shere remains the Angle PAZ. 16 deg. 57 min.

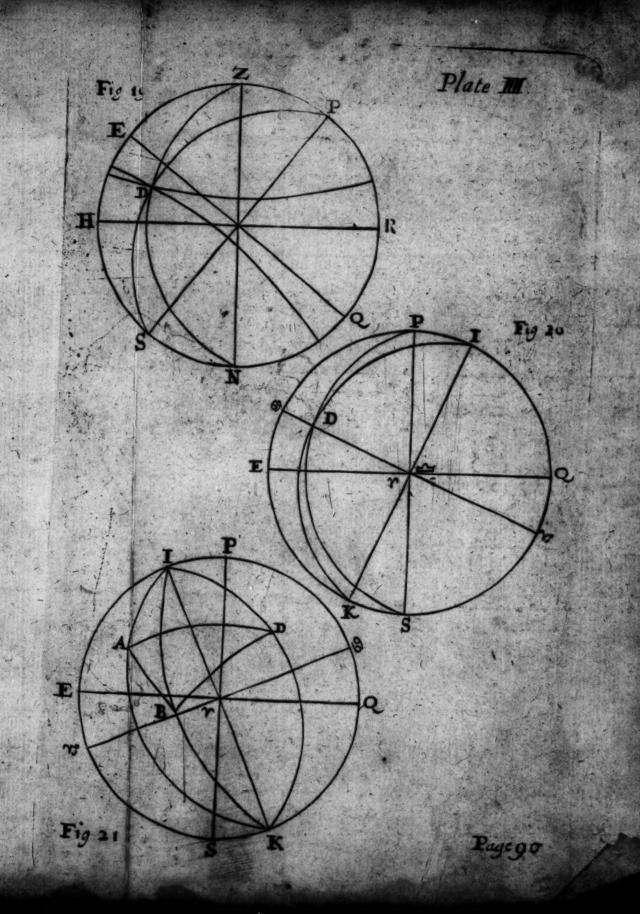
From the Angle EAZ for der so tain fabrtast the Angle EAR 34

Throll, Is the Oblique-angled Triangle PAZ, though afren the two

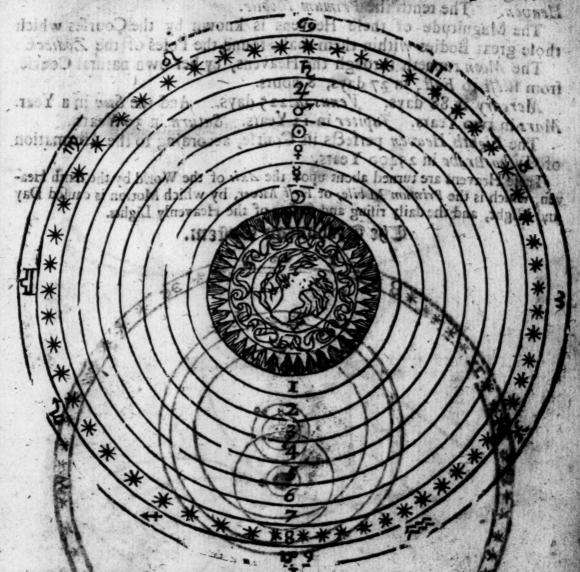
es at soe as AZ 22° 26, the contrined anole PA 2016 75, and obe third Side PZ required.x

The Operation.

Plate S. A. C. 21.



The Figure of the Ptolomaick System.



These four Elements are subject to a continual Change and Alteration

one into another, according to the Proverb, Omnia Sublungia mutabilia.

The Coelenial Part is that which is without these Elementary Parts, void of all Changes, and is by the Antient Astronomers divided into ten Parts or Heavens.

The first of which, west to the Region of Pire, is the Heaven or Orb of the Moon.

The fecond of Marcus The third of Keeps The fearth of the Sun. Obleman of Denutaria the mon famor Afronomical Observator in the World

The fifth of Mars. The fixth of Jupiter. The feventh of Saturn. The eight of the Fixed Stars. The ninth is called the Christaline Heaven. The tenth the Primum Mobile.

The Magnitude of these Heavens is known by the Courses which those great Bodies within them make round the Poles of the Zodiack.

The Moon runneth through the Heavens, by her own natural Course, from West to East, in 27 days, 8 hours.

Mercury in 88 days. Venus in 225 days. And the Sun in a Year.

Mars in two Years. Jupiter in 12 Years. Saturn in 30 Years.

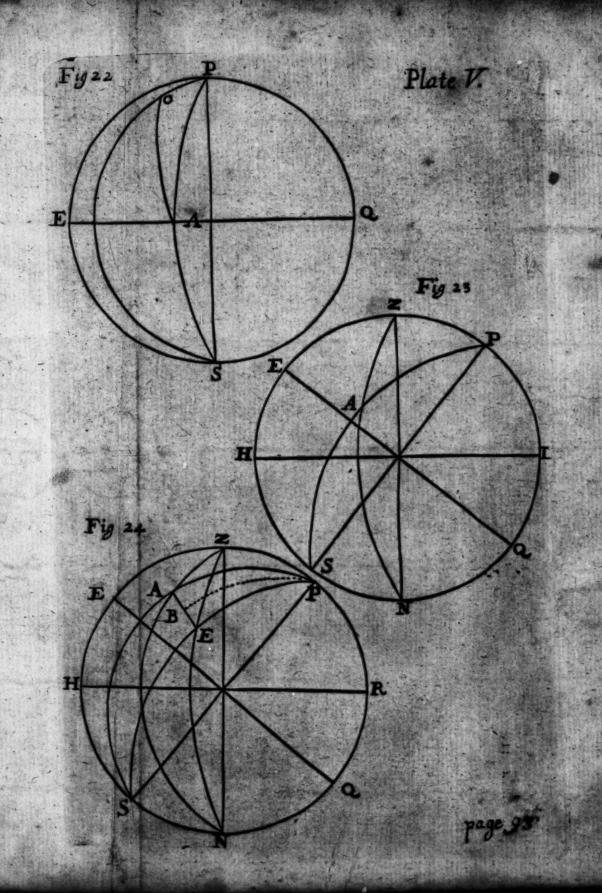
The Eighth Heaven perfects its Course, according to the Affirmation

of Tycho Brabe in 25400 Years.

These Heavens are turned about upon the Axis of the World by the tenth Heaven, which is the Primum Mobile, or First Mover, by which Motion is caused Day and Night, and the daily rising and setting of the Heavenly Lights.

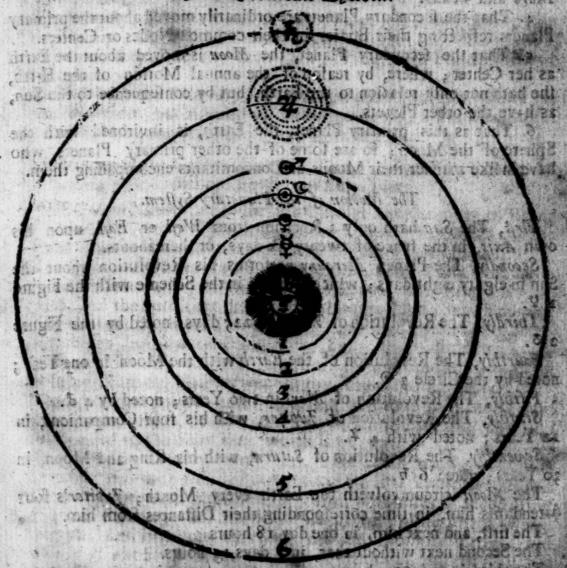
The Tuchonean Spitem.

This Hypothesis derives its Name from the Author thereof, Tycho Brahe, a Mobleman of Denmark, the most famous Astronomical Observator in the World



in his Days; who by his own Observations did rectify the Places of most of the Fixed Stars, which appeared in that Horizon wherein he lived. This famous Man, according to his present apprehension, framed this Hypothesis of the Heavenly Motions, wherein he supposeth, that Venus, Mercury, Mars, Jupiter, Saturn in their Motion, respect the Sun as their Centre; and the Sun and Mont the Earth; and that Saturn, in opposition to the Sun, is nearer to the Earth than Venus in Apogeon; and that Mars in Opposition is nearer the Earth than the Sun it self; as may appear in the said Hypothesis.

The Copernitan Spitem.



This Hypothesis was first invented by Pythogoras, and revived by Copernicus, a samous Astronomer of Germany, who lived in the Year 1500, who supposes, The Planetery Artents.

the Central only and contract of the Middle of the World, in or about the Central only and contract on the fixed Stars, and bath no Circular motion but Central only and contract on the fixed stars, and do and took the fixed stars.

The primary Planers are each of them in their proper Systems moved about the Sun, and accomplish their Periodical Revolutions

most exactly in their determinate and appointed times.

3. That the Earth is one of the Planets, and with her annual Motion about the Sun, describeth her Orb in the middle between the Orbs of Mars and Venus.

4. That the secondary Planets are ordinarily moved about the primary Planets respecting their Bodies for their common Nodes or Centers.

3. That the secondary Planer, the Moon is moved about the Earth as her Center; where, by reason of the annual Motion of the Earth, she hath not only relation to the Earth, but by consequence to the Sun, as have the other Planets.

6. That as this primary Planet, the Earth, is invironed with the Sphere of the Moon; so are some of the other primary Planets, who have in like manner their Moons or Concomitants encompassing them.

The Motion of the Planetary System.

First, The Sun hath only a Rotation from West or East, upon his

own Axis, in the space of twenty fix days, or thereabouts.

Secondly, The Planer Mercury performs his Revolution about the Sun in eighty eight days; which is noted in the Scheme with the Figure

Thirdly, The Revolution of Venus to 225 days, noted by the Figure

Fourthly, The Revolution of the Earth with the Moon in one Year; noted by the Circle 3 .

Fiftbly, The Revolution of Mars in two Years; noted by 4 3.

Sixthly, The Revolution of Jupiter, with his four Companions, in Years; noted with 4 4.

Sevenebly, The Revolution of Saturn, with his Ring and Moon, in

30 Years; noted 6 h:

The Moon circumvolveth the Earth every Month; Jupiter's four.

Attendants him, in time corresponding their Distances from him.

The first, and next him, in one day 18 hours.

The Second next without that, in 3 days ag hours.

The third in 7 days 4 hours.

And the fourth and outmost, in 16 days 8 hours. Seturn

Saturn's Moon moves about him in 16 days; and all from West to East, according to their Revolutions about the Sun.

Saturn, Jupiter, Mars, the Earth, Venus, and Mercury (whose Re-

volutions respect the Sun only) are called Primary Planets.

The rest (that move again) about Seturn, Jupiter, and the Earth, Secondary Planets.

The Earth hard a Revolution upon her Equinatifal Poles in 24 hours.

from West to East: 2 1 , they not post qual w

The Secondary Planete are all of them much less in Magnitude than their Primary; and all the Planets together much less than the Sa from whom they all receive their Light, Virtue, and Principal Power of Motion.

Far without the Planetary System are placed all the Freed Stare, in feveral Diffrances, but all unto ust incommensurable. The Parallex of

the Earth's Orb being infensible in any of their Places.

A Description of the Golden Number, Cycle of the Sun, Roman Inmoving and I diction; Epach, and Leap-Year.

HE Golden Number, or Prime, is a Circular Revolution of 19 Years. in which Term of Years it hath been antiently supposed, that the Sun and Moon do make all the variety of Aspects one to another.

The Cycle of the Sun maketh its Revolution in 28 Years, because in that time all the variety of the Dominical Letters and Leap-Tears are expired, and the 29th Year the Cycle doth begin again; which number is to find out the Dominical Letter, for any Year past, present or to come.

The Roman Indiction confiders of 15 Years, and is fer down in the Charters and Writings of the Protonoraries of the Pope of Rome , for once in x C Years the Nations were to pay Tribute to the Ramans.

The Epost is a number never exceeding 30 days; it is the at days and fix hours, which added to the Lunar Tear, being 354 days, do

make it equal to the Solar Year, which is 365 days.

The Leap-Year is every fourth Year, which hath one day more in it than a common Year; this day is made up in four Years, by the odd fix hours that are over and above 365 days, which day is added after the 24th of February: So that in the Leap Year February hath twenty nine days. And here note, that the Prime and Dominical Letters, and the Cycle of the Sun, change the first of January; and the Epast the first of March; and the Roman Indiction the first of September.

and to agon a still of and the Such are of divide by estates due 8 is the Cycle of the Sun Abres are ed the Louis

Memorial Verses on the Ecclesiastical and Civil Kalendar, &c.

To know it it be Leap Pear. 181

For Leap Year o, for past, 1, 2, or 3. of the Ministration

TERE you may omit the Hundreds of the Year of our Lord, and Livide the Refidue by 4.

For Example.

by 4, and there remains 3, which shews, it is the third after Leap-Year.

To find the Dominical Letter. dio dimitalis

What's left subtract from 7; the Letter's given.

A 1. B 2. C 3. D 4. E 5. F 6. G.7.

Of the Year of Christ 1707
The 4th part (omiting Fraction) is 426
To both which I add the Number 4137

Which divided by 7, there is left 2; which subtracted from 7 there rests ; which shews the Dominical Letter for the Year 1706, is the 5th in order of the Alphaber, that is E.

But the Leap Year hath two Dominical Letters; the latter found by this Rule serveth from St. Mairbias's day to the Year's end; and for finding Easter, the former (next following in order from A to G, and beginning again at A) serveth from New-Years-Day unto St. Matthias.

For the Golden Number, Cycle of the Sun, and Indition.

When 1, 9, 3, to the Year bath added been a sure of Divide by 19, 28, 15.

Example.

To 1707 I add r, the Sum 1708 I divide by 19, and there remains 27, which is the Golden Number for the Year 1707.

Again, to 1707 I add 9, and the Sum 1716 I divide by 28, the Reidue 8 is the Cycle of the Sun Anno 1707.

Lastly, Lastly, To 1708 I add 3, the Sum 1712 divided by 15, the Remainder 2, which shows it is the second Year of the Indication for the Year 1709.

The Prime or Golden Number being given, to find the Epact.

Divide by 2, for each one lest add 10; 30 reject : the Prime makes Epast then.

Example.

Anno 1707, the wollen Number 17, I divide by 3, and there is left.

2: therefore ten and 4, which is 20, added to 17, the Sum is 37, out of which subtract 30, and there will remain 7, the Epact for the Year

1707. The state of the state of

By the nineteen Epacts, to find the Day of Easter-Limit from the beginning of March, inclusively.

The Epails take from 47; but two.

The greatest take from 77; 'twill do.

Example.

Anno 1707, The Epact being 7, I subtract it from 47, and the Residue 40 is Easter Limit, Anno 1707, that is April the 9th, reckoned from the beginning of March Includively.

But when the Epact is 28 or 29, it must be subtracted from 77, that so the Limit may remain. And the next following Sunday after the Limit is always Easter-Day.

Easter Limit, and the Dominical Letter being given, To find

what's left from nearest Sevens, shall Easter make

Or thus; Take the number of the given Letter more by 4 from the given Limit, and the Refidue from the nearest greater Sum, of Sevens, the last Remainder added to the Limit; the Sum, or it's excess above 11, is Easter Day, in March of April.

Example Anno 1707, the Dominical Letter is E, which is the fifth Letter in order, which more by 4 is 9; which taken from the Limit, 40, the Residue is 3x; this take from the nearest greater Sum of Sevens which is 35, and there remains 4, which being added to the Limit 40, the Sum 44, therefore the 13th of April, is Easter-Day 1707.

Li Serrol , rical For the Days of the Month on which the Sun entreth the twelve Signs.

Twice 9, twice 10, four 12's, 11; Then 10, then 9, then 8, or 7.

Anno 1700. @ in.

Y. S. II. S. A. 双. 血. 机. 4. *** *** ** X. Mar. Apr. May June July Aug. Sep. Oct. No. Dec. Jan. Feb. 9. 9. 10. 10. 12. 12. 12. 12.

For the Degree of the Sun's Place on any Day. reac reac

From the day of the Month on which the Sun's Place is required, if you may, or elfe from the Sum of that and 30, subtract the day of his entrance into the Sign of that Month, the Remainder will be the degree of his Place in that or the next preceding Sign.

For the Age of the Moon, or Day of her Change.

fanus 0, 2, 1, 2, 3, 4, 5, 6; 8, 8, 10, 10, thefe to the Epatt fix: The Sum (bate 30) to the Month-day add, Ortake from 30; Age or Change is bad. Or thus; Add to the Epact in

Jan. Feb. Mar. Apr. May. Jun. Jul. Aug. Sept. Oct. Nov. Dec. O. 2. I. 2. Soul State 108 3. 4.

The Sum, if it be less than 30, or else the excess above 30, added to the day of the given Month (rejecting 30 if need be) gives the Age of the Moon that day; but subtracted from 30, seaves the day of the Change in or from the beginning of that Month.

For the day of the Full Moon, add or subtract re to or from the

day of the Change of any Example. It is the

1. For the Age of the Moon, Anno 1707, May 29, the Number for the Month 3, added to the Epact 7, makes 10; which added to 29, Erejecting 30 from the Sum) gives 9, the Age of the Moon required.

2. For the day of the Change or (New-Moon) in May 1707, the Rpact 7, with the Month 3, makes 10, as before, which subtracted from 20; the Residue 20, is the day of the New Moon in May 1707.

2. From which is being subtracted, leaves 5, the day of Full-Moon. which is a standarde contained will like

in May 1707.

To find the Day of the New Moon, and the Entrance of the Sun into the Signs, for Time past, or to come.

Paft, add; to come, subtract for Moon and Sun.

Or thus, For every 312 Years past, add 1 day to the time of the New-Moon found above; for 312 Years to come, subtract 1 day.

Likewise for 131 Years past, a day is to be added to the former account of the Sun's Entrance; and for 131 Years to come, subtracted.

To find the Different of the Sun from the Nodes of the Moon perpe-

Tear 17 bundred, Node, Sign 4, Degree 1 control land 27, 3, 800, 43.

1. Take the Interval between the given Time, and 1700 compleat in Years and Days, allowing 12 Months to the Year, and 30 days to a

Month, and the account will fuffice for this Work.

Multiply the Years of the Interval by 44, and divide the Product by 800, the Residue multiply by 9; then take the half of this Product, and distinguish the last Figure from the rest by a Point. So have you the degrees, and 10th part of a degree, answerable to the years of Interval. Also multiply the days of the Interval by 43, and divide by 800; this Quotient shews the degrees, and the Remainder divided by 80, the 10th part of a degree of the Motion for the days of Interval. Then collect the former and latter degrees and tenths into one Sum, and reduce it into Signs, Degrees, and Tenths.

3. For time afore 1700 compleat, add the Signs, Degrees and Tenths thus found, to 4, 27°, 3 tenths; but for Time after 1700 compleat, subtract them from 4', 27°, 3 tenths, and the Sum or Remainder shall be for the place of 6, adding 1 degree for the tenths, if

they exceed s, else rejecting them,

Always in Additions omit Cycles, (to wit, 124, of 360°) but in Subtractions add one Cycle, if need be, to the Number from which you

are to subtrad.

Next by the common Rule for 1700, without any Correction for time past or to come, find the Sign and Degree of the Sun's Place, and subtract the last found place of 6 from it; the Residue is the distance of © from 6 required.

The Limits of Eclipses of the Sun and Moon, in degrees from

Within 16 the Sun, and 10 the Moon, Suffer Eclipfe; above 18, 12, none.

To find the Length of the Days and Nights in the Latitude wish to strip and of the strip and of the strip and stri

To the given distances of the Sun from the new Equinoctial Points the answerable hours are these; to 15°, r hours I Sign, 2 hours : to I Sign 16°, 3 hour; to 2 Signs 6°, 4 hours; and to 3 Signs. 4 hours and a half; which hours added to 12, the Sum is from the Vernal Equinox to the Autumnal, the just length of the day; but from the Autumnal to the Vernal, the length of the Night in those distances.

And for all other intermediate Diftances of @ from the Equinoctial Points, the Proportion is As 15, 116, of 20° to 601; or as 20° to 30', So are the degrees of the exters of the intermediate Diffances above of 152 11, 16% or 21, or and not exceeding 20,269 to the minutes of the length of the day or night, above 12, 13, 14, 15 or 16 hours. Always allowing 4 degrees or days afore and after the Ingress into 5 and M. for Solflice.

The length of the day and night taken together is 24 hours, from which if the one be Subtracted, there will remain the other Andrew

Half the Length of the { Night, } is the time of { Sun-citing.

To find the Honr of the Moon's coming to South, and High-Water at London.

The Moon's Age multiply by 4; Divide By 5 for Southing; Add 3 for the Tide.

Bur when the Age of the Moon exceeds 15 days, you may reject 15

As in this Example.

Anna 1710, the Moon being 27 days old, out of which reject 15, the Remainder is 12, which being multiplied by 4 makes 48, which divided by 5, the Quotient is 9, and 3 in the Remainder: which thews that the Moon cometh to South at 9 of the Clock, and three times 12 minutes past, which is 36 minutes, (and here note that for every Unit in the Remainder, you must reckon so many times 12/; which must be added to the hour found in the Quotient, as in the Example aforegoing) to which I add 3 hours, and the Sum is 12 hours 36 min. the time of Full Sea at London.

But it is here to be noted, that by manifest Experience it is found that when the Moon is in either of the Quarters, then the Tides do not hold out their full time, but it is High-water sooner than is found by the Rule; which may partly be occasioned by the weakness of the Tide at such a time, and the length of the River. For by the foregoing Rule you may find, that when the Moon is 7 days old, the time of High-water will be at 9 of the Clock, when upon true Observation it will be found to be an hour sooner; and therefore to know the true time of High-water, you must subtract some minutes from the Time sound by the precedent Rule, according to the Age of the Moon, as you may plainly see in the annexed Table.

100 100 00 A	Example. The Moon being 7 days old, it is
1 De Moon & Age	H. M. high Tide (by the Rule) at London, at 9 of the
1141029	Clock, then in this Table look for the Figure 7,
2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Swhich is in the first Column, and right against it
3121027	olioin the two last Columns, under the Title of
13111920 3	Hour and Minute, you will find one Hour which
102027	must be subtracted from the Hour, found by the
7082223	Swhich is in the first Column, and right against it of in the two last Columns, under the Title of Hour and Minute, you will find one Hour which of must be subtracted from the Hour, found by the of Rule, and the Remainder is 8, the true Time of
1/100/22/23	100 High-water.

A Table shewing the time of the Moon's coming to South, any day

	2 2 A 4	MO of hem Age. WI HA Model Of the
Moon's		The Use of the Table to find the Time of the Moon's coming to South. The first and second
Drys.	A. M.	Columns shew the Days of the Moon's Age, in
1 16	0 48	Moon's coming to South.
2 3 7 7		Example. The Moon being to days old, I would
3 18		know at what time the Moon will be South. I
4 19	BUCK STREET, TROOPING AND SECURE	find to under the Tirle of the Moon's Age, in the
Sin 21	THE BUILD IN THE STORY OF THE STORY	forth Columns, and right against it, in the third and fourth Columns, you may have 8 hours oo!; which
7 22	THE RESERVE AND ADDRESS OF THE PARTY OF THE	sheweth that the Moon being to days old, cometh
8 23		to South at 8 of the Clock, and no Minutes; un-
9 24	7 12	to which if you add the time of flowing at Fulls
10 25	And the second second second second	and Change, the Sum will be the time of Full-Sea
11 26		at the same Place. As here at Landon, the time of
12 27		Flowing at Full and Change is at 3 of the Clock,
The second secon		which you are to add to the Moon's Southing, and the Sum is ra, which is the time of High water when
THE REAL PROPERTY.	CHARLES AND SECTION	the Moon is rodays old.

First, Find her coming to South as before; then see how many hours and minutes the Shadow wants of the hour of 12; which hours and minutes take from the hour and minute of the Moon's coming to South; and the Remainder is the hour of the Night; but if the Shadow be past the hour of 12, then you must add so many hours and minutes as the shadow is past 12, to the hour and Minutes of the Moon's coming to South, and that will be the hour of the Night.

example On the 5th of December 1706, I find the Moon to be 11 days old, and therefore the comes to the South at 48' after 8 of the Clock; and suppose the same Night you look upon a Sun-Dial, and should find the shadow to fall upon half an hour past 1, which is an hour and a half past the Line of 12; which 1b. 30m. must be added to 8h. 48m.

the Moon's Southing, Thews it is 18m. past 10. of the Clock.

Again, Suppose the same Night the shadow had fallen upon half an hour past 11; which wants half an hour of 12; which is to be subtracted from 8b. 48m. the Moon's Southing, and the Remainder will be 18m. after 8 of the Clock.

C.H.A.P. IX.

Of the MARINER'S COMPASS.

Of the Variation of the Compass, and the probable Causes thereof. Some Observations to find the Variation. The Description and Use of the Azimuth Compass. Of the Universal Ring-Dial.

SECT. I. Of the Original Discovery, and Invention of the Mariner's Compass, and the Excellency thereof.

HIS most useful Instrument, call'd the Mariner's Compass, is justly ranked among the greatest Wonders that this World affords; and deserves well to be understood by all that are Students and Practitioners in the Art of Navigation. For without the help thereof, it were impossible to trace out the unbeaten Paths of the Ocean, for the procuring Trade and Traffick beyond the Seas to remore parts of the World; whereby the glorious Gospel hath been transmitted into the most dark Corners of the Earth.

As to the original Inventor hereof, Modern Historians do somewhat vary, some attribute the Invention thereof to one John Goia (or Flavia Goia, as others stile him) of Amalphi in Campania, in the Kingdom of

Nuples,

Naples, who only accommodated the Superfices thereof with 8 Points, that is four Cardinal, and four Collateral; and so less the Improvement of this Invention to be attempted by Posterity. Others do entitle the Invention thereof to the People of China. Dr. Gilbert, in his Book De Magnete, asserts, that Paulus Venetus transported it first into Italy, in the Year 1260, having learned it from the Chineses. And Ludi Vertomannus assirts, that when he was in the East-Indies, about the Year 1500, he saw a Pilot of a Ship direct his Course by a Compass, fa-

thioned and framed as those which now are commonly used.

And Mr. Barlow, in his Book entitled, The Navigators Supply, Announces, relateth a Story of two East-Indians, that he had personal Conference with (one of them was of Mamilia in the Isle of Lazon, the other of Miaco of Japan) who declared, that instead of our Compass, they use a Magnetical Needle of six Inches, and longer, upon a Pio, in a Dish of white China-Earth filled with Water, in the bottom whereof they have two cross Lines for the principal Winds, the rest of the Divisions being left to the Skill of their Pilots. Also he there relates, that the Portagese; in their first Discoveries of the East-Indies, got a Pilot of Malinde; that brought them from thence in 33 days within the fight of Calecut; by which it appears that then they had the Use of the Compass.

But let the Invention be attributed to whom it will, his manifeffly known to have received its absolute Perfection in these Parts of the World. But more particulary, the compleating of this Invention is due to the People of Antwerp and Bruges, and also to our own Nation, by annexing to the Compass twenty four subordinate Windsor Points, and also on the Limb thereof 360 Degrees, which are numbred from North and South, towards the East and West, with 10, 20, 30, &c. So that is appeareth, that every Point containeth 11° 15'. Upon the North Point there is a Flower-de-luce, to distinguish it from the rest of the Points.

Before the Invention of this rare Instrument, Men were directed in their Voyages by certain Stars they took notice of, especially the Pleiades or Seven Stars; by Charle's Wain, and the two Stars in the Tail of the Little Bear, which were therefore called Load-Stars. Also Travellers in the Desarts of Arabia, and those of Tartaria, were guided by some fixed Stars in the Night-time, to steer their Courses in those pathless, disorder'd and unhospitable ways. So Seamen were directed by the like Heavenly Guides, in the untractable Wilderness of Waters, and unbeaten Paths of the Ocean, before this excellent Artisce was discovered. But if the Sky happened to be sullied with Miss, and the Stars.

Stars to be muffled with Clouds, then the most experienced Mariners was at a loss, and was constrained to come to an Anchor, or to lie by, to wait the Appearance of his Coelestial Directors. And if you consult Pliny, he will tell you of the Inhabitants of Taprobana, now called Sumarra, because they could not behold the Pole-Star to sail by, carried certain Birds to Sea, which they often did let fly: and as those Birds by natural Instinct applied their flight always to Land, so the Mariners directed their Course after them.

To these and the like Difficulties were Men exposed before the Invention of this marvellous Instrument; and by it Posterity is secured with a noble Remedy against this grand Inconvenience; and a Method discovered, as by an immediate Messenger from Heaven, to steer an infallible Course in the most gloomy Nights, and rumultuous Seas; and by the Providence of the Almighty be safely conducted to the desired

Port.

Ver this Inftrument is not so absolutely perfect, (by that acquired Virtue it receives from the Load-stone) but that it requires some Improvements, because it doth not conform it self to the true Meridian in all places, but varies, in some Places more, in some less, from the direct Position of the true North, and South. This Variation of the Compass augments the Mariner's Care, and ought to be constantly observed in all Voyages, the neglect of which may expose them to many Dangers.

A Discourse of the Variation, and of the probable Conjectures of the natural Cause thereof, is handled in that which follows, I thought it necessary (for Method-sake) to subjoyn the Figure of the Mariner's

appraiseth, that every Point contained in a pt. Uponthe North Points to the core for a lower-de-lace, to distribute it is nother affect the research

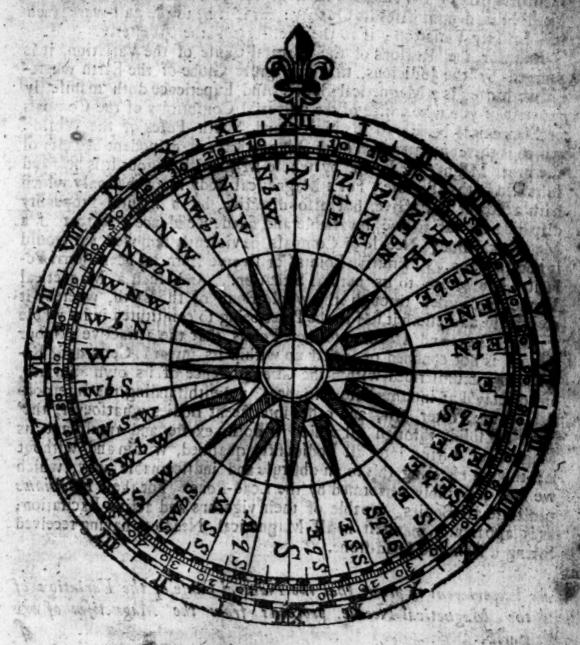
ore forme fixed. Steep in the Paght-fining solders their Condition in their path of and matched wave. The first best of an algorithm of the first best of the first best of the first best of the first best of the first of the Condition was a conditionally the first of the Condition was different for the first of the

Bounds towards the United M. G. with 10, 2000 C.

Compass. A contraction of section and an adverse Good to the desired serior office

Bereit in the threshold of this taxe infrarege, less were directed in the Very passing the state of the second of

The Figure of the Mariner's COMPASS.



SECT. II. Discourse of the Variation of the Compass, and of the Natural Cause thereof: With Observations on the Variation.

THE Variation of the Compass is an Angle intercepted between the Megnetical and true Meridian, the Horizon determining its Quantity

it is Easterly Variation; if to the West-ward, then Westerly.

and for the Reasons of the Natural Cause of the Variation, it is granted by the Judicious, that the great Globe of the Earth whereon we move, is a Magnetical Body; And Experience doth manifestly prove it if you take notice of the universal Conformity of the Compass or Magnetical Needle to the North and South Poles of the World . which is thereunto attracted by the Magnetical and dispodent Faculty of the great Magner the Earth, by whose Magnetick Vigour it is held and Instained in that Posture. For a Magnetical Body is not that only which bath a Power attractive, but also directive, by a natural Propenfity disposing it self to one invariable and fixed Residence; so that if a Magnetical Body, Needle or Compass, be violently removed, yet would it not abandon its Primitive Points, or swerve from its Meridional Polarity, but return to its natural Situation. And fuch a Magnetical Virtue is diffused through the whole Body of the Earth, whereby it constantly addresseth it felf to the Poles being so constituted in its whole Frame, Order and Aspect unto these Points, that the attractive Vigour hereof is not confined or lock'd up within its inward Cells and Reeffes, or circumscribed within the Circumference of its own Surface. but difplay'd at intermediate Distances, notwithstanding the Interposition of the Water, Air, and other interjacent Bodies whatfoever, tho' never to folid, through all which it doth excite and transplant its Magnetical Virtue into all Bodies firly qualified, within and without it; though effecting this in an abstruse and indiscernable way, which we may fee visibly performed by the Load-stone. For these Effluviums penetrate all Bodies, capable of their vigorous and active Excitation: as is apparently manifest in all Magnetical Needles, having received Strength from the Load-stone.

An Experiment to prove that the Natural Cause of the Variation of the Magnetical Needle, proceeds from the Magnetism of the Earth.

Take a vigorous Magnet, and let it be converted into a Spherical Body; and having found its Poles, delineate the same with Meridians, Missiper Heritage the solution and the second of the secon

while of the Paristion of the Compels, and of the

the Equinoctial, and Parallels; then take a small Magnetical Needle on a Pin, and if you apply this Needle to this Equinoctial of the said Stone, the Needle will lie parallel to the Axis thereof; and if you move it towards either Pole, the Needle will immediately incline towards the said Pole, according as you move it, until you come to the Pole; then will one part of the Needle point directly to the very Pole of the Stone.

But if this Spherical Magnet shall have a part of it excavated, then if you move the Needle about the Stone, as before, so soon as it shall draw near to the Limb of this Excavation, 'twill in its course of moving suddenly alter, and incline to one of the solid Sides, not at all respecting the aforesaid Poles. And this Desection may explain the Variation of the Needle; and the greater will this Variation be, the nearer it approacheth to the Poles; For whereas before the Excavation, each side being alike potent, the Needle inclined according to its natural Position; but meeting with this Accident, the Excavation, it will convert it self to the more solid Side, rejecting the impersect and defective; and so much the more powerfully, by how much the defective part bath lost of its magnetical and vigorous Substance.

And as it is with this little, so likewise may it be with the greater Magnet, the Earth, whose solid magnetical Parts are great Continents, the defective and excavated, the deep and vast Channel of the Sea. And therefore the Cause of Variation may be the Inequality of the Earth, variously disposed, and differently mixed with the Sea; and all the different Emission of its Strength and Magnetical Vigour, from the more eminent and gibbose, and from the more hollow and excavated Parts thereof. So the Needle naturally endeavours to conform unto the Meridian, being also detracted that way, where the greater and more pow-

erful Parts of the Earth are fitnated.

To this may be added, That the Variation proceedeth not only from some eminent Terrestrial Knobs or Excrescencies, which appear like so many Wens upon the face of the Earth; as also from many magnetical Veins of the Earth collaterally respecting the Needle; but likewise from the different Accumulation of the Earth, disposed unto the poles, lying under the Sea and Waters, which affect the Needle with a greater or lesser Variation, according to the Vigour of Impotency of the subservaneous Lines, or the entire or broken Body of the magnetical Fabrick under it; as is observable from several Load-stones placed at the bottom of any Water: For a Needleupon the Surface, will variously conform it self according to the Vigour or Imbecility of the Load-stones under it.

08 Oblerbations of the Clariation.

The Globe of the Earth is known to be very uneven, and unequally mixed with many Materials, differing from a Magnetical Quality, having great and stony Mountains, large Vallies, deep Seas, long and high Continents and Promontories, with mighty scattered Rocks of Load-Rones, of Iron Mines, and other Magnetical Matters.

This Variation of the Compass was formerly supposed to remain the same, but now its known to vary in all Places. To illustrate this Truth, I shall here insert some Observations of the Variation of the Compass near the City of London, for an hundred Years last past.

Mr. Burroughs his Observation of the Variation made at Lime-House, Octob. 16. 1580.

Before	Before Noon After			om ear or l Tourn al To tool die At goon 's	lat al travegos bas : evifici l risq evifici ul escurió
Sun's Alt.	Meg, Azi,	Sun's Alt.	Mag. Azi.	Variation.	Mes of the the depositive And threstos Varionils oil
Gr. min.	Gr. min.	Gr. min.	Gr.min.	Gr. min	rent Emillion eminent and thought Br tiotun belov
17 00 18 00 19 00	\$2 35 \$0 08 47 30 45 00	17 00 18 00 19 00	30 00 27 45 24 30	(2000年)	Mean Va- riation 11°
21 00 23 00 23 00	42 15 38 00 34 40	21 00 22 00 23 00	19 30 15 30	11 22 11 15 11 20	the North- Eastward
24 00	29 35	24 00	07 00	11 04	randle Librer

the supplied of the supplied o

Mr. Gunter's Observation, made at Lime-House, June 13, Anno 1622. Afternoon.

Sun's Alt.	Mag. Azim.	Sun's Azim.	Variation.	0
Gr. min.	Gr. min.	Gr. min.	Gr. min	0.4 0.5 0.5
19 00	82 02 80 50	75 52 74 44	06 10	Variation,
17 34	80 00	74 06	05 54	ward.
16 00	78. 12.	72 32	05 40	
10 FO	70 12	64 49	06 47	1.119

In this Interval of the Observations made by Mr. Burroughs and Mr. Gunter in 42 Years, the evident Diminution hath been 5 degrees.

Mr. Gillibrand's Observations, made at Deptsord
Anno 1634. June 12. before Noon.

Att.Sol.Vera.	Azim. Mag.	Azim. Sol.	Variation.
Gr. min.	Gr. mit	Gr. mir.	Gr. min.
44 45	106 00	ון לם מסובו	n 04 09 and
48 31	113 00	117 01	04 0F and
50 54	118 00	122 03	04 03

的国际经济国际		でした。自然では、自然	E 26/2 200		-A
In the	Atro	PROOR	the	1ame	1)20
III the	THE	TROOM	CHO	191110	vaj.
	PROMES S	医 多数 在 医 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图	医克里尔德斯	李锋图1893年5月	

Alt. Sol. Vera.	Azim. Mag.	Azim. Sol.	Variation.
Gr. min.	Gr. min.	Gr. min.	Gr. min.
44 37 40 48	114 00	109 53	04 07
44 37	108 00	103 50	04 10
38 46	105 00	100 48	04 12
36 43	102 00	097 56	04 04
34 32	099 00	095 00	04 00
32 10	096 00	091 55	04 05
The me	an of which Obser	vation is 04° 06'	Baftward.

Observations Made by Mr. Gillibrand at Paul's Cray in Kent, July 4. 1634. Afternoon.

	Vera. Alt. Sol.	Azimi. Mag.	Azim. Sol.	Variation.	41
	Gr. min.	Gr. min.	Gr. min.	Gr. min.	
net.	40 53	1111130	107 30	04 00	
	40 OI 39 41	10 00	105 34	03 55	11900
	38 42 35 32	108 00	99 32	03 58	
1	34 49 33 AI	101 00	98 32	00 40	
	32 57	99 00	96 02 94 58	03 58	
	30 39	97 00	94 00	04 00	
	29 29 27 SI	95 30	91 31 89 28	03 59	
	The	mean Variatio	on is 4° 01 / Ea	ilward.	

So that here also may be noted, that the Diminution of the Variation in 45 Years (from the time of Mr. Burrough's Observations) is more than 7 degrees.

Observations made by John Seller, at the Hermitage near London, with a Quadrant of 6 Foot Radius for the Altitude; and an Instrument of 2 Foot Radius for the Azimuth taken, in the Year 1666. Lat. 51 deg. 32 min.

		Fune	the 4th	, 166	6. in th	e Fore	noon.		
	Sun's	Altit.	Sun's	Azim.	Mag.	Azim.	Varia	tion.	
	0		0	1	•		0	. 1	
	26	00	84	36	85	00	00	24	
	27	30	86	26	87	00	00	34	
		June 11	ne 131b.	, 1666	in the	e After	rnoon.		可與數
	08	24	62	31	62	00	00	31	
salvant.	08	09	61	51	61	30	00	21	0.75
	07	38	.61	29	60	45	00	44 -	
2	1 07	97	60	47	60	00	00	47	111
	B. Me	Fune	the 141	b, 166	6. in 11	be Fore	noon.		oils:
	29	30	88	30	89	30	00	50	ALC:
ord all	3.1	20	1 9 L	30	.91	30	00	27	nogl
1001, 23	The m	ean of	these C	Berva	tions is	34 M	inutes	Westerl	y. 18
eri (L.)	100		ul a seni	Manager and the same		Acres 1			BOU.
(m th	e 28th	1670	in the	After	noon, t	aken h	v the	Worth:	.C.1
	n and hi				his Ho			cy.) sec
nob dar	24	30	83	34	81	40	1	54	NA.
1006	20	30	78	44	76	35	2	09	3 18 31
degri	17	03	74	32	177	18	10 2	14	d Fee
1 41 122	15	42	72	54	79	149	211.2	14	nie b
.000	13	36:	70	118	68	10	tini 2019	8	A dist
ioin at	11	II	67	14	65	15	THI	59	
A SECTION	IO	II	75	58	63	TAX 5-10-1	107世界中央	13 4	SALES SERVICE

Mr. Bon'ds Theory of the Motion of the Variation for Time to come.

	Years.	Variation Weft.	Years.	Variation West.	To April 1939
		Gr. M.	190	Gr. M.	, dim e sa
	1689	5 29	1703	7 36	
	1690	5 48	1704	7 45 7 53	
	1692	5 57	1706	8 ot 8 o9	
ealth the same	1694	6 16	1708	8 17	and a second
	1695	6 25	1709	8 25	
Et co.	1697	6 52	1711	8 41	222
whis on	1699	7 10	1714	8 36 9 04	2 2 2 11
West of the second	1701	7 19	1716	9 17 3	0

SECT. III. The Description and the Use of Azimuth-Compass.

THIS Compass doth derive its Name from its Use, being principally to find the Magnetical-Azimuth of the Sun, and is in several respects like unto another Compass, only with such necessary things added, as are most convenient for

that purpole.

Upon the sound Box, wherein are the Fly and Needle, is fakened a broad Circle of Brais, the one half of the Limb thereof is divided into 90 degrees numbered from the middle of the faid Divisions both ways, with 10, 20, 30, 82c. unto 45 degrees; which degrees are also subdivided into Minutes by Diagonal Lines, and by certain Excentrick Circles intersecting one another; for these degrees are drawn from the opposite part of the Limb whereon the Index moveth, cutting those degrees. On this Index is creeted a Sight, which for conveniency is to fall down with a Hinge, and so let up upon occasion; and from the top of this Sight, down to the middle of the Index is fastned a Thread or Lute string, to shew the shaddow of the Sun upon a Line that is on the middle of the faid Index.

And by this means of placing the Index upon the Circumference, the degrees come to be as large as they would be, if it be again moved upon the Center; the Truth hereof is evidently demonstrated in the Third Book of Euclid; Prob. 20.

This broad Circle is croffed at Right-Angles, with two Strings, and commonly from the Terminations of these Strings are drawn four small black Lines on the Inside of the Box, for rectifying the Instrument in time of Observation, by the four Lines that are also drawn at Right-Angles, on the Superficies of the Fly.

This Compass being thus fitted, is hung in strong Brass Rings, and those also fastned into a square Wainscor Box, fit for that purpose; which you may more plainly perceive in this following Figure.



The Use of the Azimuth-Compais.

First, You must rectify the Brass Limb on the Edg of the Box (by the Needle and Fly within the Box) according as the nature of the Observation doth require. For if the Observation be in the Forencon, then you must put the Center of the Index upon the West Point of the Chard or Fly within the Box; and so, that the Four Lines on the Edg of the Chard, and the Four Lines by the inside of the Box, do always concur.

Chard, and the Four Lines by the inside of the Rox, do always concur.

The Instrument being thus rectify'd, turn the Index sowards the Sun, untill the shadow of the Hypotenusal Thread fall directly into the very sit of the Sight that is on the Index, and also upon a Line that is in the middle of the Index; that at the same time will the inner Edge of the Index cut the degree and minutes of the Sun's Magnetical Azimuth from the East to the Northward or Southward.

As for Instance: Suppose the Instrument be rectify'd, as before is from for an Observation in the Forenoon, and that the Index Month of the

degrees upon the Limb to the Northward of the East, then is the Azimuth of the Sun 80 degrees from the North; or else 100 degrees from the South. So likewise if the Index had cut to degrees to the Southwards of the East, then would the Azimuth be 80 degrees from the South, and 100 from the North.

And here also observe, that the Compass standing in this Position. and if the Azimuth of the Sun be less than as deg. from the Meridian. and you turn the Index toward the Sun, it will go off the Divisions on the Limb, and there can be no use made thereof as it now stands.

Therefore you must turn the Instrument just one Quadrant, or quarter of the Compais, viz. Place the Center of the Index on the North or South Point of the Chard, according to the Sun's Polition from you, and then the Edg thereof will cut the degree of the Sun's Azimuth from the North or South. That which is faid as to the Use of the Azimuch Compass, when the bur is on the East-lide; the like is to be understood with the same reason when he is on the West-side of the Meridian.

And also Note. That the Observations of the Sun's Azimuth are best

when the Sun is near the Herizon, because the Motion of the Sun in his

Altitude is more ear to offer a

To The an Amplitude by the Azimuth-Compass.

If the Amplitude be taken in the Morning, at the rifing of the Sun. then you must turn the Center of the Index right over the West point of the Fly, and rectify the Instrument by the Lines within the Box, to the Lines on the Ely.

Then looking through the Sight, turn the Index towards the Sun, until you cut the Body of the Sun with the Thread; at the same time will the Edg of the Index shew the degree of the Sun's Magnetical Amplitude, upon the Limb of the Instrument, from the East, either Northerly or Southerly.

But if you take the Amplitude in the Afternoon, at the fetting of the Sun, then you must turn the Index over the East Point of the Fly,

and proceed as before.

Having found the Magnetical Azimuth or Amplitude by the Compals, find the Sun's Azimuth by Problem 13. Chap. 8. and the Sun's Am-

plitude by Problem 8. Chap. 8.

Then find the Difference between the Sun's Azimuth or Amplitude, and the Magnetical Azimuth or Amplitude, by subtracting the one from the other, this Difference is the Variation of the Compais. And to know whether the Variation be Easterly or Westerly, observe these followingRule Rules

Rules for casting the Variation

I. By the Observation of the

the Observation of the Azimuth by Calcula In the Forewoon. on) from the North, be greater than the Magnetical Azimuth (by Ob fervation) then is the Variation Eafterly.

2. If the Angle of the Sun's Azimuth from the North be less than the

Magnetical, then is the Variation Westerly.

In the Afternoon. 2. If the Sun's Azimuth from the North be greater than the Magnetical, then is the Variation Westerly.

4. If the Sun's Azimuth from the North be less than the Magnetical?

then is the Variation Easterly.

Example 1. Suppose on the 4th of June 1690, in the Forencon, I set the Sun with my Azimuth Compais, and find his Magnetical Azimuth to be 90° 48' from the North, at the fame time the Sun's Azimuth, b Calculation, is 84° 20' from the North part of the Meridian.

The difference of these Azimurhs (which is the Variation) is 060 18

I demand which way the Compass varies

Anfw. Westerly; because that Observation being made in the Fore noon, and I find the Sun's true Azimuth from the North to be less than the Magnetical, according to the fecond Rule aforegoing.

Example 2. Admit that in the Afternoon, at the same time that find the Sun's Azimuth to be 102° 00, I find his Magnetical to be

96° oo' from the North.

The difference is o6° 00; I demand which way the Compass varies. Answ. Westerly; because the Observation being made in the Afternoon. I find the Sun's Azimuth from the North to be greater than the Magnetical, according to the third Rule.

Note, These Four Rules for casting the Variation, by observation of the Sun's Azimuth, are the same in South as in North Latitude, the

Sun's Declination being either Northerly or Southerly.

II. By the Observation of the Amplitude.

At Sun-rifing. 1. If the Sun's Amplitude be nearer to the North than the Magnetical, then is the Variation Westerly.

2. If the Sun's Amplitude be farther from the North than the Magnetical, then is the Variation Eafterly.

At Sun-setting. 3. If the Sun's Amplitude be nearer to the North

than the Magnetical, then is the Variation Easterly.

4. If the Sun's Amplitude be farther from the North than the Magne-

tical, then is the Variation Westerly.

Example. Admit that by the Azimuth-Compass, at Sun-setting, I find the Magnetical Amplitude to be 19 deg. 60 min. and the Sun's Amplitude to be 24 deg. oo min, from the West Northerly; I demand whi way the Compais varies?

Anfw. Eafterly; because by an Observation at Sun-setting, the Sun's Amplitude is nearer to the North than the Magnetical, according to

Having by the former Rules found the Quantity and Quality of the Variation

it yet remains there be some Directions for rectifying the Courfe.

The manner that I shall here for down) is performed by a Compass-Chard, (having Degrees on the Limb, and a pair of Compasses; which tho it be mechanical, yet it's facile and demonstrative, and in my Opinion exact enough for Nautical Ules; however, any one may use the Pen if he bleafe. The land of the land in

But before we deliver the Rule for Operation, it will not be amis

for plainness fake, to give these Cautions of not low ...

1. That when a Man directly beholds the North part of the Horizon. the East is on the Right Hand, and the West on the Left; and therefore when the North-point of the Compais (and consequently all the other Points) vary from the true North or Meridian to the Eastward, then the Variation is reckon'd to the Right Hand; and for the same Reason. if the Variation be Westerly, it's accounted to the Left.

2. That in the use of the Compass Chard, you must always observe. that you place the Course, or Point on which you steer, right from you,

The Rule! Take the quantity of the Variation in degrees, from the Isimbof the Chard, between the Compasses (the Chardlying before you as is directed) placing one Foot in the Rhomb or Course; if the Variation be Easterly, turn the other Foot towards the Right Hand; but if Westerly, to the Left: The Number of Degrees in which the Point of the Compale flays, thews the true Course from the North or South, either Easterly or Westerly, the Quantity and Quality of the Variation being allow'd.

At for Example. 1. Let the Magnetical Rhomb, or Point of the Compais. be North-East, and the Variation to degrees Easterly: I de-

mand the true Rhomb?

The Chard lying as is directed, take the extent of the degrees between the Compasses, and place it from the N. E. toward the Right Hand, because the Variation is Easterly, that shows the true Course to be N. E. 15 degrees, or N. E. by E. a little Eafterly.

2. Let the Course by the Compass be West and by South, (i. v.) S. W. 78 deg. 47 min and the Variation to deg. Easterly, as before, I de-

mand the true Rhomb?

Take the extent of to degrees between your Compasses, and place it from W. by S. rowards the Right Hand; it shows the true Rhomb to be S. W. 88 deg. 45 min or almost West

Les the Magnetical Rhomb be West, and the Variation, to degrees feerly. I demand the true Course?

Take the extent of ro degra wards the Right-hand, it gives the true Rhan 80 deg. oo m almost West by North.
4. Let the Magnetical Rhomb be N. N. W. the Variation to or almost West by North

Westerly; I demand the true Rhomb?

Take the extent of to degrees, place it from the N.N.W. roward the Left-hand, because the Variation is Westerly, it gives the true Rhom! N. N. W. 32 deg. 30 min. or almost N. W. by N.

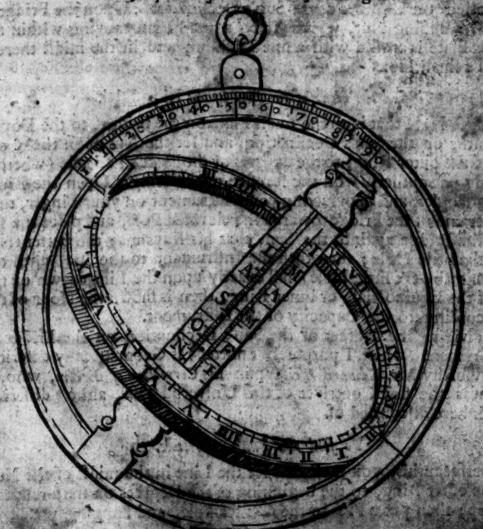
5. Let the Course by the Compass be West, the Variation to deg.

Westerly. I demand the true Course?

TO STATING STREET, SALE OF LABOUR

Take the quantity of the Variation to deg. place it from the West towards the Left hand, which shews the true Rhomb to be S. 80 deg. W. or almost W. by S.

The Description of the Universal Ring-Dial.



The outermost Ring represents the Meridian of the Place, and on the fore-side has one of its upper Quadrants divided into 90 degrees: likewise on the back-side a Semicircle is divided into the like Number of degrees from the Hole or Center in the Circumference. On the Conventity of this Ring is sitted a Nut with a Wire-ring to it, having a small Line drawn in the middle of it; to move to any of the degrees on the foreside.

The inner Ring (when they are open at Right-angles) represents the Equinoctial Circle, on the inside of which is drawn a Line in the very midst, and thereon are divided the Hours into Halves and Quarters, and are number'd with their proper Figures on the upper side of this Ring.

The Bridge represents the Axis of the World, in the middle whereof there is cut a long slit; upon one side are plac'd the Days of the Month, on the other the Degrees of the Sun's Declination: Upon the Bridge is contriv'd a sliding Nut, which directs a small Plate moving within the slit; this Plate is cross'd with a fine Division, and in the midst thereof is drill'd a small Hole.

To find the Hour of the Day by the Ring-Dial.

Place the Hole that is on the small Plate on the Bridge, to the Day of the Month, or the Sun's Declination, and set the Nut upon the Convexity of the outer Ring, to the degrees of the Place's Latitude (whether Northerly or Southerly) on the foreside of the Ring: Open the Rings to Right-Angles, and then having your Instrument on your Finger, turn the upper end of the Bridge towards the elevated Pole, and place the flat side of the Bridge against the Sun, that his Rays may the better transpierce the little Hole; then turn the Instrument to the Sun, until the Sun-beams (by the little Hole) fall exactly upon the Line drawn on the inside of the Equinoctial, or inner Ring, then is shewn the Hour of the Day according to the Capacity of the Instrument.

The dividing the degrees of the Sun's Declination on the Bridge of this Instrument (which I purposely omitted) is Geometrically described by the Worthy Mr. Edward Wright, in his Correction of Errors, who, I think, was the first Contriver of this Universal Dial, altho' differing

from this here discoursed of.

To find the Sun's Altitude.

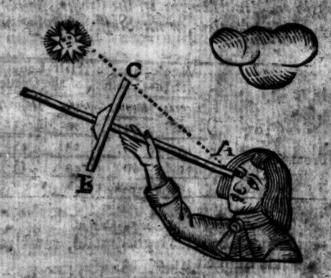
To perform this, you must first set the Line in the midst of the Nut, upon the outer Ring, to the beginning of the Degrees on the foreside of the same; then put a Pin in the Center-hole, and hanging your Dial

upon your Finger, turn the Edg of the outer Ring towards the Sun, for as the Shadow of the Pin may fall upon the Divisions on the back-fide the Degrees cut by the Shadow in the Sun's Altitude of 1971/107 Note, If you use the Ring Dial in South Latitude, you must place the

Note, If you use the Ring Dial in South Latitude, you must place the Hole in the sliding Place on the Bridge, to the Sun's Declination, using the South-declination instead of the North, and the contrary.

CHAP. X. Containing the Use of the Gross-Staff, and Quadrant: Likewise how to find the Latitude of a Place by the Meridian Altitude and Declination of the Sun: And the Use of the Nocturnal.

The Figure of the Cross-Staff, and the Manner of the Observation.



THIS Instrument is of some Antiquity in Navigation, and is commonly used at Sea to take the Altitude of the Sun or Stars, which it performs with sufficient exactness, especially if it be less than 60 to grees; but if it exceed 60, it is not so certain, by reason of the length of the Cross, and the smalness of the Graduations on the Staff.

The Staff is made straight, four-square, and commonly of Box or Pear-

tree, and graduated on the Sides with degrees or minutes:

The Crosses, usually four, are commonly made of the same Wood with the Staff, of a convenient breadth, and of length proportional to the Graduations, fitted to slide evenly upon the Staff, without jogging.

On one fide of the Staff, the Graduations being about three degrees, and proceeding towards the Center or Eye-end, increase by every 10 minutes to 10 degrees; and this fide is call'd the Ten-fide; sometimes the breadth of the Thirty-Cross supplies the place of the Ten-Cross.

f the Staff, the Division begin at about three ro On another fide of the Graduations begin about to and increase to the end of the Staff to 60% this is signed the Sixty-fide.

The remaining and fourth Side bath the Divisions beginning at 30%

and increasing upwards to 90°, from thence it is nam'd the Ninety-side, and his Cross (the longest) the Ninety-Gross.

Sometimes the feveral fides of the Staff are numbred likewise with their Complements to 20° in small Figures, viz. at 90° stands oo, 2-

The Use of this is to take the Complement of the Altitude, or Zenithdistance from the Staff, without Subtraction.

A Table of the Lengths and Half Lengths of the Crosses, shewing the Measure of each Cross by the Graduation on the Staff, praving whether they be rightly made or not.

2		Whole of the	Length Croffes	Half I	Length Croffes.
13		Degrees	Minutes.	Degrees.	Minutes.
(0)	10()	08	34	. 02	12
30(50) (0	19	47	23	52
60(Prom	60) (30	00	40	13
(90)	90(36	52	53	07

An Example of the Sixty-Cross.

The length of the Sixty-Cross, if rightly made, must reach from 60° to 30° 00'; and his half Length to 40° 13'.

re are two ways principally for the graduating the Crofs-Staff one

Geometrical Projection, the other by Arithmetical Calculation.
will give you an Example of the latter, by which you may divide any if, or at leaft be able to examine one that is already graduated.

Example of the Sixty-Cross.

Suppose the Length of the Sixty Cross to be to to Inches, and the nan Length ; to Inches; I defire to know the distance of 45° 30' from the Center of the Staff proportional to this Length of the Cross. Take half of 45° 20°, that is 22° 45'

The Proportion is Tangent of 220 45' is to half the Length of the Crofs. 510 Inches, so is the Radius -To the distance required, 12, 16 Inches,

This gives the distance from the Center of the Staff, to the Division.

reprefenting 45° 30' to be 12. 16 (or 116) Inches.

But if you do propose to graduate a Staff, the more ready and expediate way is to divide the half length of the Cross into 100 or 1000 equal parts, and taking only the Tangent Complement of half the Angle required, out of a Canon of Natural Tangents, gives the Distance required.

Example. Suppose, as before, the half length of the Sixty-Cross to be to Inches, and it is required to know the Distance from the Center to

45 30 3

The half-length of the Cross being divided into 100 equal Parts, or into as many as conveniency admits of the rest (supputated by Estimation) look into the Tables of Natural Tangents, for the Tangent Complement 22° 45', (the half of 45° 30') and you will find 238472; then cutting off two Figures toward the Right-hand, the Remainder 2384 shews the Number of equal Parts (whereof the Half-Cross contains 1000) which must be taken, to set off the Distance from the Center to 45° 10, that is twice the half-length of the Cross, and 184 Parts more.

The like you may perform for any other Degree, to every tenth or fifth Minute, or less, according as the Staff will admit of the Divisions; and as you see in the Example of this Cross, so the like may be per-

form'd for any Cross of what length soever.

The Use of the Cross-Staff.

To take a forward Observation of the Sun's Meridian-Altitude at Sea.

When you do intend to take the Meridian-Altitude at Sea (in order to the obtaining of the Place's Latitude) it is convenient that you be preparing yourfelf for your Observation some competent time before Noon; and consider what the Sun's greatest Altitude may be that Day, accordingly to use those Crosses that may be most fit for your purpose.

As suppose the Meridian-Altitude for that Day be judg'd to be 20° then use the Thirty-side of the Staff, and the Thirty-Cross; if you think it

will be 20°, or more, then take the Sixty-Cross.

There is another Requisite fit to be understood before you proceed to Observation, and that is, how to place your Fore-Staff to your Eye, to prevent an Error mention'd by Mr. Wright, in his Correction of Error;

to avoid which, take these few Hinrs.

First, Place the Center of the Staff at A, to the out-side of the Corner of your Eye, as near your Eye as conveniently you can, without hindring your Sight, letting the End rest upon your Eye-bone, respecting as it were the Eye's Center, and cause the visual Rays to concur with the middle Parallels drawn on each side of the Cross-Staff, and then is your Staff rightly plac'd for Observation: But because this is somewhat

R

Afficia

Mincult plainly to be describ'd, and perhaps that which is already faid may not be so obvious to the Reader as I could wish it. I will therefore give an easy Illustration, which may be verify'd by Experience.

Having first of all fatisfy'd yourself in the truth of the Divisions on the Staff, and likewise of the exact Length, and Half-length of your Crosses, then put on the Sixty-Cross, and place it to 30° on his proper Side, and also slip on your Minety-cross parallel with the former, and put that to 30° likewise, on his peculiar Graduations; then bring the End of the Staff to the Corner of your Eye (as is directed) and remove it so that you see each End of the two Crosses at once exactly to concurr and agree with the visual Lines proceeding from your Eye; that is the place of your Staff in time of Observation, and may easily be found

by frequent Trial.

Having thus prepar d for your Observation, and acquainted yourself with the holding of your Instrument, being upon the Deck, turn your Face towards the Sun, and place your Staff to your Eye, holding the Cross upright, look at the upper-end of your Cross at C for the Sun, and at the lower at B for the Horizon: But if the Sea obscure the Horizon from your Sight, then remove the Cross a little further from your Eye: if on the contrary, your Sight do not extend so low as the Horizon, but the Sky only appears in the stead thereof, then move the Cross a little nearer your Eye, until by the upper part thereof you see the Center of the Sun, and by the lower the Horizon, exactly at the same time; then look upon the proper Side of the Staff (for the Cross you use) the Sun's present Altitude be cut by the same; and this if it were for one single Observation either of the Sun or any Star, were sufficient.

Receive wait (making your Observation as your Judgment shall direct you curtil the Sun is greatest Altitude being that you are to take, you must therefore wait (making your Observation as your Judgment shall direct you curtil the Sun be upon the Meridian, stall sliding the Cross nearer your Eye as the Sun siles, until you perceive it to be at the highest; for so soon as the Sun is to the Westward of the Meridian, and falling, if you make Observation again, you will find the Sea to obscure the Horizon from your Sight, and then in no case remove your Cross, but

let it remain fix d, and finish your Observation for that Season.

Then cast your Eye upon that Side of the Staff belonging to the Cross you use, the Degrees and Minutes cut thereby, and number d with larger largures, (decreasing always from the Center of the Staff) gives the Super Mendional Altitude, and the small Figures underneath, the Complement of the Altitude, or the Zenith Distance.

In observing forward by the Cross-Staff, 'tis usual to have a piece of Red Glass to defend the Sight from the Lustre of the Sun in time of

Observation.

[It would, in my Opinion, be better to have the Glass and in a piece of Brais, and so to be put upon the End of any of the Crosses, as occasion requires. Thus much for a forward Observation.]

After the same manner you must observe the Altitude of the Star.

To make a backward Observation of the Sun's Assitude by the Cross-Staff.

These Observations are frequent at Sea, especially with the Holanders; and to perform this, you must have a Horizon-Vane, the inner-side of which fits upon the Center of your Staff, or else a sliding one, according to the Dutch Fashion.

Likewise there is a Shoe of Brass to fit on to the End of any of the Crosses, whose Use is the same with the Horizon-Vane in the Quadrant

Having a Staff thus fitted, place the Horizon-Vane upon the Center or Eye-end of your Staff, and put on a Cross fittest for your purpose; fix the Brass Shoe at the lower End thereof, then turn your Back to the Sun, and looking thro' the Sight (made by the Brass Shoe) on the end of your Vane, elevate or depress the end of your Staff, until the Shadow made by the upper-end of the Cross, fall upon the upper-part of the Sight in the Horizon-Vane; then look through that Sight for the Horizon: But if the Sea obscure the Horizon from your sight, then remove your Cross a little nearer to the Horizon-Vane; but if on the contrary your Sight doth not extend so low as the Horizon, but the Sky only appears instead thereof, then remove the Cross surther from the Horizon-Vane, till you see the Shadow sall upon its due place, and perceive the Horizon exactly at the same time, then have you the Sun's present Altitude.

If you observe for the Latitude, you must reiterate your Observation as before; and when you perceive the Sun to be past the Meridian, desist, and concluding your Observation, account your Degrees and Minutes, either of the Altitude, or its Complement as is before shown.

To use the Staff in a backward Observation, after the Dutch Pashion, there must be a Horizon-Vane sitted to slide evenly upon the Staff, and then all the variety from the former manner of Observation will be this:

Place any of your Crosses that you intend to use upon the Center of the Staff turning the Nut inward, then slide on your Horizon-Vane with the Nut inwards, and fix on the Brass-Shoe to the lower-end of your Cross; then proceed with your Observation, removing your Horizon-Vane, as before you did the Cross, and the Degrees and Minutes cut by the Edge of the Horizon-Vane, upon the Side peculiar to the Gross you use, is the Sun's Altitude, or Complement thereof, as you reckon it in the greater or lesser Figures.

R 2

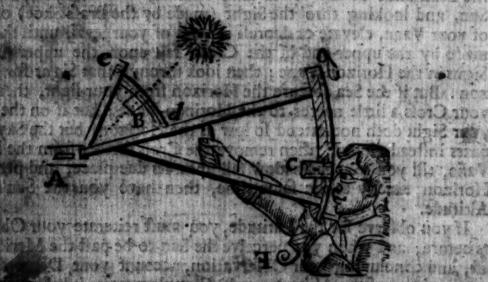
Description and Useof the QUADRANT.

Quality is of a very commodious Form and Contrivance. ting at present the best approv'd, and most general Instrument , for observing the Sun's Meridian Altitude at Sea.

Parcs of this Instrument are principally Three Vanes, and Two which Arches together contain 90 Degrees, and give it there-

Instrument is said to be first contrived by Captain Davis, (that ploy'd in Queen Elizabeth's time to discover the North-West and therefore call'd Davis Quadrant, and by the French, the Mark instruction sold we would write a rate of particle

The Figure of the Quadrant, and Manner of Observation.



19: That which in time of Observation respects the innex'd Figure represented by A; is call'd the Horizon-n gives the Shadow, noted by B, is nam'd the Shadow gnilled with C, is call'd the Sight-Vane.

leffer noted with de, is named the Sixty-Arch, bes but 60°; it is of a small Radius (advisedly so cone apt placing of the Vane B thereon, that the Shae stronger, and the more perspicuous to the Eye of the

commonly divided but to every Degree, and numbred of the Arch downwards to the Line of Partition e drawn on the middle of the upper Leg of the Quadran

between the Two Arches) with 7, 10, 17, co. And ment of the Altitude. Sometimes this Arch is figure from the Line of Partition upwards towards the higher end of the with 5, 10, 15, 60, to 60; but this is not frequently used.

The greater Arch, here denoted by the Letters fg, is call'd the Thin Arch; this Arch is of a large Radius, the better to be divided and fi dived into Degrees and Minutes, the Limb whereof is of a competent breadth; and thereon are usually describ'd several Concentrick Circles intersected with Diagonal Lines, for the more facile and exact dividing the Degrees into every 5th or every 2d Minute; and hereby the Subdivisions are conspicuous, and may readily be computed by the Observer. But because possibly this manner of Division may not be understood by every One that has occasion for this Instrument, for their sakesthere

fore I have annex'd this following Figure.

The Figure of part of the Arch.

di A ta tunban periodical inchisore

The Olders

Maridian di Legaran

The security was made ed mitrocar each o

· · · · · · · · · · · · · · · · · · ·
THE RESERVE NAME OF THE PARTY O
2 de Dela Dela 2 de
THE RESERVE OF THE PARTY OF THE
6 20 20 30
THE PART OF THE PA
为 Table Tab
1 10 20
5百万0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
THE REAL PROPERTY AND PERSONS ASSESSED.
2000年1月1日 1000日 1
2
: 神经 自己,自己的 医性 医性 经 经 经 经 经 经 经 经 经 经 经 经 经 经 经 经 经
通常 3 mm 100 mm 200 mm 100 m
设有了种类的。。1988年1997年的特别的发展的影响,但是 对于1987年1987年1987年1987年1987年1987年1987年1987年

all not are presented the trace for the for the The foregoing Figure is part of the Limb of this Arch, as its ufus drawn upon the Limb of the Quadrant, each Degree being subdivided to 5 Minutes: upon the Plane of this Arch are described 6 concents Circles, and are noted with the Figures 1, 2, 3, 4, 4, 6. And in the Limit of each degree are drawn 2 Diagonals, interfecting these Circles, and those Diagonals divide each Degree into 2 parts, viz. into 30 Minutes and the concentrick Circles subdivide each of these Diagonals, representing 30 Minutes into 6 other Parts, being 5 Minutes 2 piece: Therefore the rst intersection at 5, is 7 Minutes; the 2d at 10, is 10 Minutes; the 4d at 17, is 15 Minutes; the 4th at 20, is 20 Minutes; the 5th at 250 Minutes; the 6th at 30, is 30 Minutes: The 1st again at 35, is 36 Minutes; the 2d at 40, is 40 Minutes; at 45, is 45 Minutes; at 50, is 40 Minutes; at 50, is 45 Minutes, or 1 Degree And the like is to be understood of the rest, always as they ascend, in ercafing & Minutes.

Circle there are which are 6 or 10, and are to be computed as is here hown, and noted by the Figures at the end of this Scheme; then see how many Diagonal Lines are drawn within the extent of each Degree, which are 2 or 2; then multiply the Number of concentrick Circles, by the Number of Diagonals in 1 Degree, and by the Product divide 60, (the Minutes in a Degree) the Quotient shall give you the Number of Minutes that each intersection increases by, and is more than the precedent. As suppose the concentrick Circles to be 10, the Diagonals in each Degree; then multiply 10 by 2, the Product is 20, by which if you divide 60, the Quotient is 2, which shews that the intersections increase by 24 Minutes, the first representing 2 Min. and so 4, 6, 8 Minutes, &c. to 58 and 60 Min. or 1°; and then 1° 2′, 1° 4′, 1° 6′. &c. And the like is to be understood of the rest.

The Use of the Quadrant.

This Instrument is commonly used to observe the Sun's Meridian

Altitude, which to perform we will briefly describe.

First, Put the Horizon-Vane on the end of the Quadrant on A, and then the Sight-Vane upon the Thirty-Arch in the precedent Figure; and lastly, the upper-edg of the Shadow-Vane upon the Sixty-Arch, to a certain Number of Degrees most proper for your present Observation; which readily to perform, take this Caution.

Consider what will be the Complement of the Meridian Altitude that Day, then place the Shadow-Vane so, that the Degrees cut by the upper-edge of the Vane, be always less by 10 or 15° then you judge the Complement of the Sun's Meridian Altitude will be that Day in the

place of Observation.

For instance: Suppose that the greatest Altitude of the Sun for the time in the place of Observation, be estimated to be 45°, the Complement is 45°; then place the Shadow-Vane at 30 or 35 deg. which are

money for your prefent Observation.

Having thus prepar'd your Instrument, and being ready upon the Deck, turn your Back towards the Sun, and holding the Quadrant as uponght as you can; place the Sight-Vane to your Eye, and looking thro' the Sight, bring the Shadow of the upper-edge of the Shade-Vane, to fall upon the upper-part of the Slit, or open Sight in the Horizon-Vane, and arothe same time look thro' the said Slit for the Horizon; and if the fact that are the Horizon from your Sight, then slide your Sight-vane a little divier down towards f; but if on the contrary, your Sight doth not extend to low as the Horizon; but if the Sky only presents itself to your Eye, Gren remove your Sight-vane a little higher toward g; then make Observation again, continuing to move your Sight-Vane higher or lower according

Shadow fall upon his due place, and that at the fame time will be a fy fee the Horizon through the Sight in the Horizon Vans, then have you the Sun's prefent Altitude. But it being the Meridian or the greatest Altitude that you are to observe, you must therefore continue to make Observation as often as you shall think fit, (but especially you are to tend your Observation, when you perceive the Sun almost upon the Meridian) until the Sun be to the Westward of the Meridian, and is less sening his Altitude; for then, if you make Observation, the Sky will be seen, and not the Horizon; and in this Case you must not alter your Sight-Vane, but letting it stand, conclude your Observation for that Season: Then cast your Eye upon the Thirty-Arch, and see how many Degrees and Minutes are cut by the inside of the Sight-Vane, and thereto add the degrees at the upper-edg of your Shadow-Vane, the Sum is the Complement of the Assitude, or the Sun's Distance from the Zenith.

Note: The small Arch in some Quadrants contains 70 degrees, and the greater 20 degrees, whose Sum is 90. These Arches are numbered and divided like the former; and if that be well understood, this will not seem obscure, and therefore it is needless to say any more of this Alteration.

Glass to be let into the Shadow-Vane, which may be used when the Sun is hasey, and will not strike a clear shadow upon the Horizon-Vane; then this Glass will contract the Beams of the Sun, and reslect a small speck of Light upon a small black Line drawn on the Horizon-Vane, which respects the Center of the Sun. And surther Note, That in those Observations made by the upper-edge of the Shadow-Vane, it is proper to substract 16 min. or somewhat less, from the Sun's Altitude, or add it to the Zenith Distance (for the Semi-diameter of the Sun); but in using the Glass you are not to make any such Allowance, because the Speck represents the Center of the Sun.

Sect. III. Rules for finding the Latitude of the Place by Observation of the Sun's Meridian Altitude, or Zenith Distance, by help of the Table of the Sun's Declination.

BEcause 'tis common to work the Observation of the Sun, taken by the Quadrant, and other Instruments now in use, by the Complement of the Meridian Altitude, or the Sun's Distance from the Zenith, I shall therefore give Rules, illustrated with Examples, for that purpose.

Rule r. If the Sun comes to the Meridian in the South, and have South-Declination, subtract the Declination from the Complement of the Maridian Abitude, the Remainder is the Latitude of the Place of Observation Northerly: But if the Declination exceed the Zenith Distance of the Place of Observation exceed the Zenith Distance of the Declination exceed the Declinatio

Subtract the Zenith Distance from the Declination, the Remainder is

the Latitude Southerly.

Example 1. Admit you are at Sea, and the Sun being upon the Meridian in the South, is 37 deg. 30 min. diftant from the Zenith, and at the fame time hath 12 deg. oo min. South Declination; I demand the Latitude of the Place.

The Opera- The Sur's Dealing of State Chitude 37° 30' The Sun's Declination South, fubtract-12 00

The Latitude of the Place - 25 30 North. Example 2. Admit (being at Sea) the Sun being on the South part of the Meridian, is to deg. distant from the Zenith, and the Declination 20 deg. 20 min. South: I demand the Latitude of the Place.

The Sun's Declination —————————20° 30' The Opera- The Distance from the Zenith, subtract - 10 00 The Latitude ______10 30 South.

Rule 2. If the Sun be upon the Meridian in the South, and hath North-Declination, then add the Declination to the Zenith-diffance. the Sum is the Latitude Northerly.

Example. Admit a Ship at Sea, and the Sun on the South-part of the Meridian is 30 deg. 30 min. from the Zenith, and the Declination is 15 deg. 30 min. North; I demand the Latitude?

The Compl. of the Alt. or Zenith-dift. is 30% 30'

The Latitude -----Rule 3. If the Sun be on the Meridian in the North, and have North Declination, then subtract the Zenith-distance from the Declination. the Remainder is the Latitude Northerly: But if the Zenith-diffance exceeds the Declination, then subtract the Declination therefrom, the Remainder is the Latitude Southerly.

Example 1. Suppose the Declination were 20 deg. North, and the Zenith-distance 12 deg. 30 min. the Sun being upon the Meridian in

the North; I demand the Latitude?

The Sun's Declination North-200 00'

Example 2. Suppose the Sun's Declination to be as before, 20 deg. North, and that being upon the Meridian to the Northwards, his Zenith Distance is 40 deg. 15 min. I demand the Latitude?

Operation. The Latitude -20 15 South

Rule 4. If the Sun be upon the Meridian in the North, and hate South Declination, then add the Declination to the Zenith Distance, the Sum is the Latitude Southerly.

Example. Admit the Sun's Declination were 16 deg. 47 min. South,

and the Zenith Diftance 29 deg. 45 mm. I demand the Laritude.

The Declination of the Sun South — 16° 45

The Zenith Distance add — 29 45

Operation. The Latitude — 46 20 South.

Rule 5. If the Sun have no Declination, then the Complement of the Altitude is the Latitude of the Place; and if the Sun be on the Meirdian in the South, your Latitude is Northerly; if in the North, Southerly. This needs no Example.

Rule 6. If the Sun be in the Zenith, i. e. 90 deg. above the Horizon, then the Declination either Northerly or Southerly, is the Latitude of

the Place. This likewise needs no Illustration.

Rule 7. If you be within the Arctick or Antartick Circles, and observe the Sun upon the Meridian under the Pole, then add the Sun's Declination to the Complement of the Altitude, and subtract the Sum from 180°, the Remainder is the Elevation of the Pole.

Note. If your Instrument wherewith you observe give only the Meridian Altitude, then subtract that Altitude from 90 deg. the Residue is the Zenith Distance, or Co-Altitude of the Sun; and the Operation is the

fame as the precedent Examples.

s blod mointwisice For the Stars at Santacity would of

What hath been here delivered in these Rules, concerning the Sun's being upon the Meridian, the same is to be understood of any Star whose Declination is known.

Admit you should observe the bright Star Arduriu, whose Declination is 20 deg. 58 min. North, when he is upon the Meridian in the South, and find his Altitude to be 65 deg. 25 min. the Compl. thereof 24 deg. 35 min. is the Zenith distance; then adding 20 deg. 58 min. to 24 deg. 35 min. the sum 45 deg. 32 min. the Latitude Northerly, according to the second Rule foregoing.

But if you observe by any of the Stars near the North-Pole, whose Polar-distance is set down in the Tables of Declination; and if they be on the Meridian under the Pole, add the Complement of the Declination, or Polar-distance, to the Meridian-Altitude found, the sum is the

Latitude Northerly.

But, Secondly, if you observe any Star that is upon the Meridian in the North above the Pole, then from the Meridian-Altitude of that Star subtract the Complement of the Declination, or Polar-distance, the Remainder is the Latitude Northerly: But if the Complement of the Star's

8

Declination cannot be subtracted from his Meridian-Altitude, subtract the Mendian-Aktitude therefrom, the Remainder is the Latitude Southerly. The same may be understood of Stars near the South-Pole.

Here I thought it necessary to mention something of the Crossers. which are certain Stars that are of good use in the Southern Navigation; they are so called, because they do some what resemble the Form of a

Crofs, according to the annexed Figure. The Figure of the Constellation called the Crossers.

The Head A Declination from the Southski who some stall bas some on the Main

I his needs no Exacto a.

Fue 6. If the un be in the Soil had a or deet above the there the Darrage on the Party series by

in the Seath, your Lanting is Working it in the New Safety

The Cock's Foot, Declination from South Pole 28. 45. The Sear at C, call'd the Cock's Foot, or rather the Crofs-Foot, whose Declination, according to the Observation of Mr. Edmond Halley at St. Hellena, is 61 deg. 17 min. Southerly; and fo the Compl. of the Declination or Polar-diffance, is 28 dep. 45 min. By this Polar-diffance, and the Meridian-Altitude of this Star, when he is either above or below the Pole, you may find the Latitude of the Place, by the Rules of the Stars taft mention'd The Polar diffance of the Head of the Crofs, is 34 deg. Landy the precedent 45 min.

To know when these Stars are fit for Observation, hold up a Thread and Plummet; and when the Thread cuts the Star at A and that at C both at the same rime, then they are upon the Meridian, and fit to be observed.

Sod! V. The Description and Use of the Nocurnal.

HIS Instrument consists of Three Parts:

First. The broadest and greatest, which we may call the unmoveable Part, which hath a handle to hold it by, in time of Observation.

Secondly, The first moveable, or middle Part.

Thirdly, The long Index, that is to turn to the Polition of those Srars

or which they are made, viz. the Guards of the Little or Greet Beer.

The foreside of the first, or unmoveable Part, bath the Limb or outward Circle divided into 12 Months, and each Month subdivided into its respective Days, and are counted towards the Lest-hand, and mark'd with their Names, or the first Letter thereof, as I for January, F for February, M for March, &c. And upon lome of them there are two other Circles, the outermost of which is divided into 24 equal Parts or Hours; and the other into 29 Parts and a half, or Days of the Moon's Age, by ich the Moon's Southing may be known by Inspection, and the

Of these Nocturnals there are two sorts, one for the Guard of the Little, the other for the Guards of the Great-Rear, or Charles's Wain commonly call'd the two Pointers. Now to know for which of these Constellations any Nocturnal is made, you may observe, that the Nocturnals that are for the Guards of the Great-Bear, have the 17th of February on the Top; and if it be for the Guard of the Little-Bear, then you will find the 21st of April there. The back-side of this Part is divided into the 32 Points of the Compass, which are to shew the bearing of the Guards, thereby to know what Dechnation the North-Star hath upon any Point of the Compass.

The second and moveable Part hath a Tooth proceeding from it, with the edg continued in a right Line from the Center; which is to be turn'd to the Day of the Month at pleasure; and on the Superficies thereof is a Circle divided into 24 equal Parts or Homes; which when the said Tooth is set to the Day of the Month, and the Index turn'd to the Position of the Guards, the straight side of the Index will shew the

Hour of the Night upon the faid Circle.

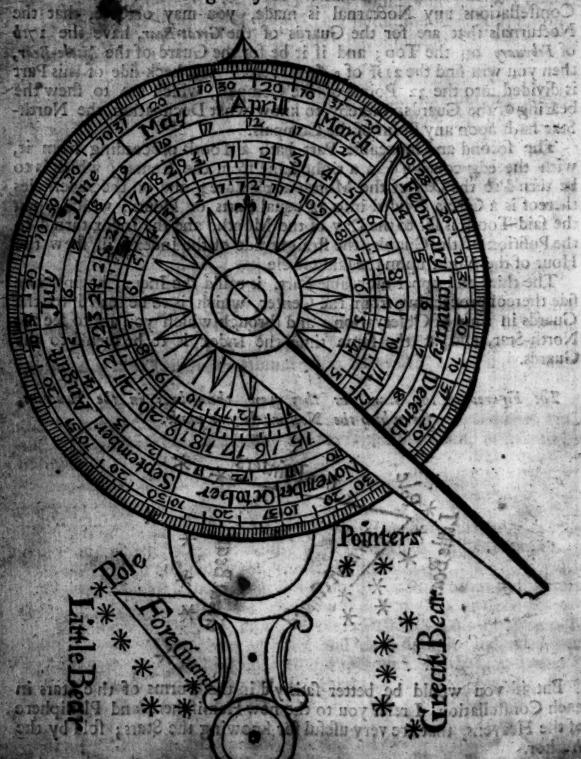
The third and upper moveable Part, is call'd the Index, having one fide thereof proceeding from the Center, which is to be turn'd to the Guards in time of Observation; and through which you are to see the North-Star, and at the same time the Index is to be turn'd to the Guards.

The Figures of the Stars, as they sheen themselves in the Heavens, for which the Nocturnals are made.



But if you would be better farisfyld in the Forms of the Stars in each Constellation, I refer you to the new Hemispheres and Planiphere of the Heavens, that are very useful for knowing the Stars; sold by the Author.

ellis ... The Figure of the Nocturnal ...



Here followests a Table for the Declination of the North Star, upon every Point of the Compass the Guards are upon, fitted for both sorts of Nocturnals.

he Hole i	Points of ni	o For the	For the guards of the great in no
al e1810	the Com-	guard of the	Bear, or aftermost Wheels
moon 4	pass	Little Bear.	in Charles Wain, called
afcending the Meridi	es thancof.	Ulanerst edi	the two Pointers
Me		D. M	giri D.M.
100 0	North.	2 0987	the Meridian of the Meridian o
153.38 Sam.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 526 Z	RZ 2 20
P S	N.N.E.	1 2957	of 2 33 Apose
Guards	N. E. by N.	1 7 02 5 %	
Dott Bid	North East	9 35 8 9 0	1 3 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
S C th	N. E. by E.	8 000 2	
of the Gorlower	E. North E. E. by N.	L Side Your	8 5 1 65 B
1 2 2	Hi Willow Sun	0 22	0 33 OL 1 33 OL 1 1 07
्र विद	Eaft.	1 18	66
former North,	E. by S.	1 4TO HO	orthic 38
2Z	L. U. L.	2 01 6	26
If the	S. E. by E.	2116 7	> Z 0 08
A	South East.	2 25 1	10 0 29 0 28
le	S. E. by S.	2 30 0	# E 1 20 H
i Daid 2	S. S. E.	2 (329 11511	1 20 1 H
So la la constante de la const	S. by English	SIRRO PARO BOR	1 2 04 2
CONTRACTOR OF SAME	South.	1 .080 2 0	1 2 200
Merid	S. by W,	1 55 9	9 8 2 30-
i finit ž	15. S. W.	1 34 5	
		1 10 3	the Meri
15 15 15 15 15 15 15 15 15 15 15 15 15 1	South West.	0 43 0	G G 2 26 1 B
nards be corrective	S.W. by W.	0 14	[2 119
and a	W. S. W. W. by S.	0 15	母さいiss I/wan in oc
tow woolb		9 144 niwo	and energine 33sm concern the g
fit	Weft.	1 11 H	1 2015 - 43 2 in smr a
0.5	W. by N.	3687	38 00 3 M M
1 2	W.N.W.	1 58 Z	ALCO MUNICIPAL 1890 PICE TO 18
a Dani S	N. W. by W	2 4 B	100 43 80 2411 10 316 11 11 11 11 11 11 11 11 11 11 11 11 1
1500000	North West.	Asias Sin	BI Z BI TO BE SUIT OF THE SERVICE BE A 12
sobinitie	N. W. by N.	1 30 36	al Egimuzont is
77	N. N. W. N. by W.	2 29 7	5 2 10 244 M 22 3 10 10 10 10 10 10 10 10 10 10 10 10 10
State of the state	J.N. by W.	12 22 16	10 0 H 2 94 H, 3011

Take the Handle in your Hand, with the foreside towards you, holding of it upright in your Hand, (which you may discern by the Tip that is on the very top of the Nocturnal) then looking through the Hole in the Center to the North-Star, you must turn the upper Edg of the Index (which cometh from the Center) to the Guards; this being under-

To find the Hour of the Night by the North-Star, and the Guards either of the Little or Great-Bear, and upon what Point of the Compass they are.

good, you may now proceed to the feveral Uses thereof.

To perform this, you must first set the Index of the second moveable Part to the Day of the Month, (then if it will not stay of it self, you must stay it with your Thumb) holding it as you are before directed; find the North Star through the Hole, and turn the Index to the Guards, and then upon the second moveable Part, the edg of the Index shall cut the Hour of the Night. At the same time you will find on the back-side what Point of the Compass the Guards are upon, so that you may know also what Distance the North-Star hath at that time, either above or under the Pole.

To find the time of the Moon's coming to South any day of her Age, and also the Time of High-water that Day.

First, find the Moon's Age on the moveable Part, and right against it in the Circle of Hours, you will find the time of the Moon's Southing. Suppose the Moon were eight days old, I demand the Time of her

coming to South,

Therefore look for 8 on the Circle of her Age, and right against it you will find in the Hour-circle, almost half an hour past 6 of the Clock in the Evening (because that always between the Change and the Full she cometh to South in the Evening, but after the Full she cometh to the South in the Morning). So having found the Moon's Southing, if you add thereto the Hour of the flowing at any place, it will shew you the Time of High-water that Day.

Example. Suppose here at London, the Moon being 8 Days old, I find by the Nocturnal, that the Moon cometh to South at almost half an Hour past Six of the Clock; to which I add three Hours, the Time of High-water at the Full and Change, which makes Nine of the Clock and almost half an Hourpast, the Time of High-water at London-Bridge,

that Day of the Moon's Age.

And if those Numbers being added together should exceed 12, that 12 must be subtracted from it, and that will be the Time of Full-Sea.

As suppose the Moon should be 13 Days old, at which time I find by the Nocturnal that the Moon cometh to the South at 10 of the Clock,

and almost half an Hour, unto which if you add 3 it makes 12 Hours and a half; from which if you take 12, there remains 1 of the Clock and almost half an Hour, the Time of High-water, at London-Bridge, according to the common way of Computation.

And to know the Time of Full-Sea at any other Place, I refer you to

the Tide-Tables.

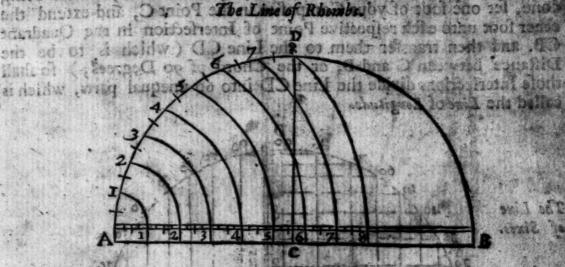
Chap. XI. Containing the Use of the Plain Scale, Gunter's Scale, Sinical Quadrant, Plain Chart, Mercator's Chart, of both Globes, and likewise the socret Properties of the Load-stone.

The Description and Use of the Plain Scale.

THE Use of this Inftrument is facile and delightful, and serves the Construction of Problems in Navigation and Astronomy.

The Lines on a Plain-Scale are usually a Line of equal Parts, Chords, Rhombs, and Longitude; but on this here described, are likewise a Line of Sines, Tangents, and Secants.

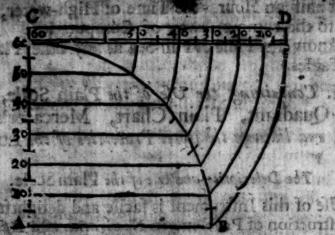
We shall here infert the Projection of these Lines on the Scale.



The Projection of the Line of Rhambs.

For the dividing of the Line of Rhombs, first draw the line ACB and upon the Point C describe the Semi-circle ADB, and divide the Quadrant AD into 8 equal parts: which being done, set one foot of your Compasses in the Point A, and with the other foot extend to each of those Divisions, and transfer those Extents unto the line ACB, which will divide the said line into 8 unequal parts, which will be a line of Rhombs, and to humber with 1, 2, 3, 4, 6 c. and 5. And to the Halves and Quarter points of the Compass are to be inserted.

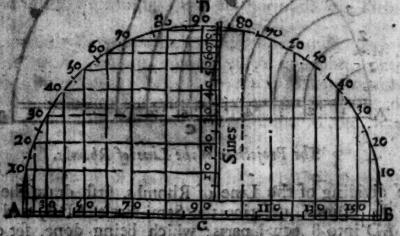
The Line of Longitude



The Proportion of the Line of Longitude.

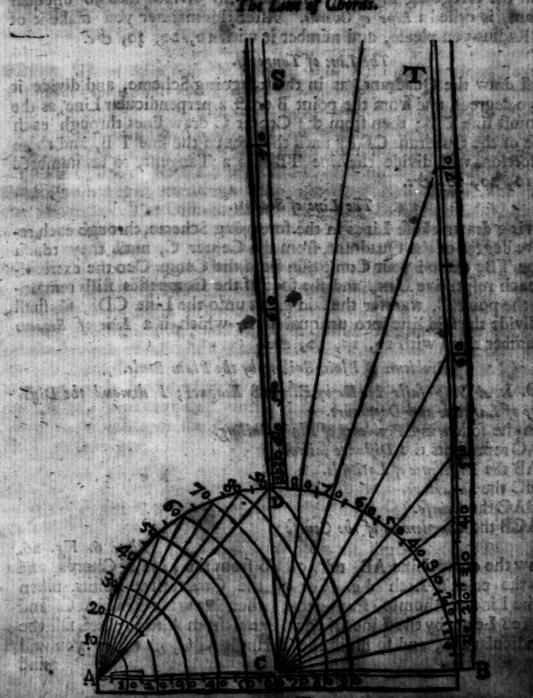
First, draw the Quadrant CAB, and divide the Side CA, into so equal Parts, then through each of those equal parts draw Lines parallel to the Side AB, until they touch the Quadrant CB; which being done, set one foot of your Compasses in the Point C, and extend the other foot unto each respective Point of Intersection in the Quadrant CB, and then transfer them to the Line CD (which is to be the Distance between C and B, or the Chord of 90 Degrees;) so shall those Intersections divide the Line CD into 60 unequal parts, which is called the Line of Longitude.





The Projection of the Line of Sines is thus to be performed; First draw the Line ACB, and upon C draw the Semi-circle, and one of the Quadrants divide into 90 Degrees, as the Quadrant ADC; then draw a line through each tenth Degree of the Quadrant parallel to the line ACB, a will divide the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts, which will be a Line of the parallel to the line DC into 90 unequal parts.

The Projection of the The Projection of the Like of Varied Sines, is thus to be affected draw the line ACB, and upon C describe the Semi-circle ADI divide into 180 Degrees; then through each Deg. drawing Rig parallel to the Line DC. they will divide the Line AB in Parts, which will be a Line of Verfed Sines, to be num 20, 30, 40, &c. unto 180.



For the Projection and Division of the Line of Chords, you must first the Dismeter ACB in the foregoing Scheme, and upon the Central Codes of the Semi-circle ADB; which Semi-circle divide into two Subdrants by the point D, then divide the Quadrant DA into 90 equal pares on Degrees; this being done, let one foot of your Compasses in the point A lasthe other be extended to each degree of the Quadrant AD which Extents transfer unto the line ACB, as you may fee the Arches lead in the foregoing Figure. This Line, fo divided into 90 unequal divisions, is called a Line of Chords. After this manner you make it of what Radius you please, and number it with 10, 20, 30, &c.

The Line of Tangents.

First draw the Quadrant, as in the foregoing Scheme, and divide it into 90 degrees, and from the point B erect a perpendicular Line, as the innermost line T B; then from the Center C draw lines through each degree of the Quadrant CDB, until they touch the line T B, and those Intersections will divide the line TB into a Tangent, to be numbred with 10, 20, 16, 0c.

The Line of Seconts.

Having drawn those Lines in the foregoing Scheme, through each respective degree of the Quadrant, from the Center C, until they touch the line TB, extend your Compasses from the Center C to the extremity of each respective Line, and the foot of the Compasses still remaining in the point C, transfer the said Lines unto the Line CDS, so shall they divide the said line into unequal parts, which is a Line of Secants and number them with 10, 20, 10, 60.

Problems of Plain Sailing by the Plain Scale.

PROB. I. A Ship Sails N. E. by E. 108 Leagues; I demand the Difference of Latitude and Departure.

In the following Problems of Plain Sailing.

AC represents the Distance sailed.

AB the Disserence of Latitude.

BC the Departure. BAC the Course.

ACB the Complement of the Course

Vote 6. Fig. 26.

Draw the occultaine AB, take off to from the Line of Chords, and fweep the prick d Arch de. Set off the Course five Points, taken from the Line of Rhombs, from d to e; then draw the Line AeC. and fet off 108 Leag. by the Line of equal Parts, from A to C; let fall the endicular to and fo finish the Triangle ABC, in which you will find

THE PERSON OF THE PARTY AND PARTY.

find the diff. Lat. A B 60 Leagues; the Departure BC 90 Leagues

PROB. II. A Ship fails N. E. by E. until her difference of Lavitude be 60 Leagues; I demand the Distance and Departure?

Plate 6. Fig. 26.

Draw AB of the given Length, and raife the occult Perpendicular BC, fet off the Course five Points, as in the former Problem. Draw AC and til it meet with BC, and finish the Triangle, the distance is 108 leagues, and the Departure 90 leagues.

PROB. III. A Ship fails N. E. by E. until her departure be so Loagues; I demand the distance and difference of Latitude?

Draw the occult Line AB, and raise the Perpendicular BC of the given Length 90 Leagues; then upon the Point C sweep the Arch de with the Chord of 60°, and place the Complement of the Course three Points from d to e; then draw CeA until it meet with AB, and finish the Triangle. The Distance is 708 Leagues, the difference of Latitude 60 Leagues.

PROB. IV. A Ship sails between the North and the East 108 Leagues of pil the Difference of Latitude he 60 leagues. I demand the Course and Departure?

Plate 6 Fig. 28.

Draw AB so leagues, and raise the occult Perpendicular BC, take off the Length of AC the Distance to 8 leagues, and placing one point of your Compasses at A, describe the Occult Arch cutting the Line BC at the point C, by which draw AC, and finish the Triangle; the Departure BC is 90 Leagues; with a Chord of 60% sweep the Arch de, which measured upon the Line of Rhombs, will be found five Points, the Course sought.

PBOB. V. A Ship sails between the North and the East 108 Leagues, until her Departure be 90 Leagues; I demand the Course and Difference of Latitude?

Plate 6 Fig. 28.

Draw the occult Line AB, and raise the Perpendicular BC of the given Length 90 Leagues; take AG, 108 Leagues, and setting one Point of the Compasses at C, describe the occult Arch, cutting the Line AB at A, by which draw AC, and finish the Triangle. The Course is found five points, measured as in the former Problem, the difference of Latitude 60 Leagues.

MARCE

PROB. VI. A Ship fails between the North and East, until the difference of Latitude be 60 Leagues, and the departure 90 Leagues; I demand the Course and Difference?

Plate 6. Fig. 28.

Draw AB 60 Leagues, raise the Perpendicular BC 90 Leagues, and by the Points A and C draw A C, and finish the Triangle. The Course is found 5 Points, as in the 4th Problem, the Distance 108 Leagues.

PROB. VII. There are two Parts that bear S.W. by S. and N. E. by N. differes 40 Leagues; A Ship sails from the Northermost of them, first South, and then West by South, sometimes upon one of those Courses, sometimes upon the other, until she arrive at the Southermost Port; I demand bow many Leagues she bath sail d upon one Course, and how many upon the other?

Plate 6. Fig. 29.

Let A represent the Northermost Port, and E the Southermost, AE heir distance. AD the distance failed upon the South Course DE, the

diffance upon the W. by S. Courle.

Line, describe the Arch sg, setting off three Points, and draw the ocult Line AD, being a South Line; then sweep the Arch hl, and set off sour Points, drawing the occult Line DE, until it meet with AD, and so single the Triangle ADE. The Distance sailed South is 29 Leagues, and W. by S. is 22 Leagues.

PROB. VIII. There are two Islands that bear East and West, and are distant to Leagues; A Ship sails from the Westward N. E. by E. and then failing 12. Leagues and a half farther, arrives at the Eastermost Port; I demand the Distance sailed upon the first Course, and what was the second Course?

Plate 6. Fig. 29.

Let A represent the Westermost Port, E the Eastermost, D the Place where the Ship altered her Course, making the best of her way; AD the N. E. by E. Course; DE the other Course unknown: Draw AE 40 Leagues, set off an Angle of three Points, and draw AD, the N. E. by E. Line occultly; take the distance 22 Leagues and a half, and placing one Point of your Compasses in the Point E, cross the Line AD in the Point D, draw DE, and finish the Triangle. The Distance upon the first Course is 29 leagues, the Angle at E is sour Points, therefore the second Course S. E.

PROB. IX. Two Ships fail from the same Island, the first sails N. W. by N. 22 hagues and a half, the second W. by N. 40 leagues, and arrive at their several Ports; I Demand the Bearing and Distance of those Ports.

Plate 6. Fig. 29.

E represents the Island, D the Northermost Port, A the Westermost.

Draw AE 40 leagues, and fet off the Angle at E four Points, and draw QE 22 leagues and a half; then by the Points D and A draw AD, and finish the Triangle. The Angle at A is three Points, which shows the Bearing of the Ports to be E. N. E. and W. S. W. and the Distance AD almost 29 leagues.

PROB. X. A Ship fails from a certain Port W. N. W. 22 Leagues and shalf, and then more Southerly 29 Leagues, and then she is forc'd back again to the Port from whence she came 40 Leagues; I demand her Course from the second blace to the third, and how she steer'd back again?

Hate 6. Fig. 29.

E represents the first Port, D the Place were the Ship altered her

Course, A the Place where she was driven back.

Draw the Line DE 22 Leagues and a half, take the Distance AD 29 Leagues, placing your Compasses in D, describe the occult Arch at A, and take the distance A E 40 Leagues; describe another occult Arch from E crossing the former in the Point A; draw A E and A D, and finish the Triangle. The Arch mn is 9 Points, therefore the Course from the second Place to the third, is S. W. by S. and she steer'd back again to the first Port E. N. E.

Here follow some Problems of Mercator's Sailing, wrought two ways.

First, by the Plain Scale only, by taking the middle Latitude, which is not exactly true, but may serve as an Approximation in a single Course provided the Distance be but small, otherwise tis too gross.

The second stay is by the Meridional Parts, which will be exact ac-

cording to the Capacity of the Instrument.

The Use of the Plain Scale in Mercator's Sailing by the middle Latitude.

PROB. I. A Ship being in the Latitude of 40°, sails a N. Westerly Course, until she come into the Latitude 45° 30', she Difference of Longitude 90 Leagues; I demand the Course, Distance, and Departure?

Plate 7. Fig. 20.

For the Solution thereof by the Plain Scale, first draw the Line ACB and upon the Center C describe the Semi-circle ADB, and cross the Line ACB at Right-Angles with the Line ECD; then find the middle Latitude; by taking the Half-Sum of both Latitudes added together, which you will find to be 42° 45', which middle Latitude set off from D to M and L both ways, and draw the Line ML; then set the Distance D F from B to G, then set off the Difference of Latitude 110 Leagues from B to H, and from G to A, and upon the Point A creek

Perpendicular, as A K, and from A set off the Difference of Longitude in Leagues, which is 90; from the Point K draw the Line K G, then from the Point H, erect an occult Perpendicular, as the Line H I; then laying a Ruler from the Point B to the Point E (where the Line B K doth cut the Line EC) and draw the Line B I; then upon the Point B describe the Occult Arch Cn, which being measured on the Line of Chords, will be found to be 31° or two Points three Quarters, which is the Course required, N. N. W. three Quarters Westerly: and the Line B I is the Distance required, which being measured upon the Line of Leagues, will be found to be 129 Leagues, and the Departure H I 66 Leagues.

PROB. II. A Ship bling in the Latitude 40° North, Sails N. N. W.; (or 7° Westerly) until she come into the Latitude of 45° 30; I. demand the Distance run; the Difference of Longitude, and the Departure?

Plate 7. Fig. 30.

In the Solution of this Problem by the Plain Scale, draw the Line A B, at any convenient Length, and upon C describe the Semi-circle ADB, and find the middle Latitude as before, and let it off from D to M and L, and draw the Line M L, and upon the Point B describe the obscure Arch C n, and set off the Course given, (which is 2 Points three quarters, or 21° and a quarter) from C to n, and set off the Difference of Latitude 110 Leagues, and the same Distance from G to A, and from the Points H and A creek the two perpendiculars H I and A K; then through the Point n, draw the Line B I, which being measured in the Scale of Leagues, will be found to be 129; then laying a Ruler from G to the Intersection of the Lines at F, draw the Line G K, and note where it intersected the Line AK, which is at K: So the Distance AK being measured upon the Scale of Leagues, will be found to be 90 Leagues, the Difference of Longitude sought, and HI the Departure 68 Leagues.

PROB. III. A Ship being in the Latitude 40° North, fails between the North and the West, until she arrive to the Latitude 45° 30', and that her Distance run be 129 Leagues; I demand the Course, Difference of Longitude and Departure?

Plate 7. Fig. 30.

For the Solution of this Problem, first draw the Line A C B at any convenient length: and upon C describe the Semi-circle ADB, and set off the middle Latitude as before, and likewise the Distance CF from C to G, also the Disterence of Latitude in Leagues from B to H, and from G to A; then ered the two Perpendiculars at H and A, then take

the Distance between the Compasses, and set one foot of the Compasses in B, and extend the other Foot towards I, until it doth intersect the Perpendicular at H, in the Point I, and draw BI; then laying a Ruler upon the Point G, unto the Intersection of the Lines at E. draw the Line GK, and note where it doth intersect the Perpendicular at A, which will be at K; then the Distance KA being measured on the Scale of Leagues, will be found to be 90, the Difference of Longitude sought. Then for sinding of the Course, with the Radius of your Scale draw the obscure Arch Cn, and that being measured on the Line of Chords, will be found to be 31°, or two Points three Quarters, the Course required, which is N. N. W. three Quarters Westerly, and the Departure HI 66 Leagues.

PROB. IV. A Ship being in the Latitude 40° North, sails N. N. W. or (7°) W. 129 Leagues; I demand the Latitude of the second Place, the Difference of Longitude and Departure? Plate 7. Fig. 30.

For the Solution of this Problem, first draw the Line B A of any convenient Length; then from one end thereof, as B, deferibe the occult Arch Cn, and let off 31°, or two Points three Quarters from Cton: then by the Point n draw the Line BI, the Diffance 129 Leagues, and from the end thereof as at I, let fall the Perpendicular IH; then meafure the Distance HB, which you will find to be tro Leagues, or 'c 30; the Latitude of the second Place is 45°30. Then having the two Latitudes find the middle Latitude, as is before directed; then upon the Line BA, and upon the Center C, describe the Semi-circle BDA, and drawing the Line DE from the Point D, fet off the middle Latitude 42° 45' both ways to M and L, and draw the Line ML: then take the distance DF in your Compasses, and set it off from B to G, and from H, to A;" then upon the Point A erect an occult Perpendicular as MK; then by the Point E, draw the Line GK; till it interfect the Perpendicular at K; then draw AK, which being measured in the Line of Leagues, will be found to be 90 Leagues, or 4° 40', the Difference of Longitude, and HI the Departure 67 Leagues.

PROB. V. A Ship being in the Latitude 40°, fails in that Parallel, until her Difference of Longitude be 6°; I demand the Distance run;

This Question is usually demonstrated among the Problems of Mercator's Sailing, by a Scheme drawn for that purpose, differing from that already described; but we shall here shew the way how to resolve this Problem by the Line of Longitude on the Plain-Scale.

It is to be understood, that according to the Globe, the Meridians do incline nearer together, until they concur and intersect each other in the Poles, so that hereby the degrees of Longitude are not so of the Equinoctial Minutes in any Parallel on the North or South side of the Equinoctial; but the nearer to either of the Poles you approach, the more they degrease; so that in the Latitude of so deg. there are but 30 min. of the Equinoctial to one Degree of Longitude; and in the Latitude of 84 Degrees, there are but 6 Minutes, which doth shew the Errors of the Plain Chart: And therefore in sailing, it ought to be rectified according to the Globe, and to that end was this Line of Longitude contrived, which is thus to be used.

If you desire to know how many minutes there are in a Degree of Longitude in any Latitude, you must extend the Compasses from the Center in the Line of Chords, to the Degrees of the Latitude of the Place, and the same extent will reach from the Center at 60 on the Line of Longitude; to the number of Minutes answering to a Degree

of Longitude in that Latitude.

Therefore for the Solution of the fifth Problem here proposed, extend your Compasses upon the Line of Chords, from the Center to the Latitude of the Place, which is 40°, and the same extent will reach from the Center at 60, in the Line of Longitude, to 46, which shews that 46 make a degree of Longitude in that Latitude, which 46 being multiplied by 6, the Degrees of Longitude, gives 276, the Distance run which was required,

PROB. VI. A Ship being in the Latitude of 40°, Sails in that Parallel 276; I demand her difference of Longitude?

For the Solution of this Problem, find how many Minutes make a degree of Longitude in the Latitude of 40°, (as in the last Problem) which is 46; therefore if you divide 272 (the distance run) by 46 (the Miles in a degree of Longitude in that Latitude) the Quotient will be 6°, the difference of Longitude required.

Another way to work Mercator's Sailing by the Plain Scale, and the Meridional Parts.

PROB. I. A Ship sails N. N. W. from the Latitude 40° North, to the Latitude 42° 20' North; I demand the Distance sailed, the Departure, and difference of Longitude? Plate 7. Fig. 31-

Having the two Latitudes 40° North, and 42° 20' North, find the

Meridional Difference of Latitude by the Table of Meridional Por which is 186 and subtracting the one Laritude from the other, the

To work this Problem, draw the Line AbB, then place 140 from A to b, and 186 from A to B; raise the two occult Perpendiculars, b c and BC, fet off the Course two Points and draw the Line Acci producing it until it cut both the Perpendiculars in the Points c and C. and so finish the two Triangles Abc, and ABC. The distance Ac is 152' the Departure bo 58, and the difference of Longitude BC 77'

PROB. II. A Ship fails from the Latitude 40° N. to the Latitude 42° 20' N. until her Difference of Longitude be 77 Westerly; Idemand the Course. Di-Rance, and Departure? Fig. 215

The Meridional Difference of Latitude is, as in the first Problem

186°, the proper Difference of Latitude 140°.

Draw AB 186', place 140' from Asto b, raile the Perpendicular BC of his given length 77, and also the occult Perpendicular be; by the Points A and C draw AC, and finish the two Triangles. The Course the Angle at A is two Points, or N.N.W. the Distance Ac 152, the Departure 18! White next both les Arch DE, fet off gvery of deg. from E .to D. toll den T

PROB. III. A Ship fails Westerly 152' from the Latitude of 40' North, to the Latitude of 42° 20' North; I demand the Course, Departure, and Difference of Longitude?

The Meridianal Difference of Latitude is 186 Minutes, the proper Diff. Lat. 140 Minutes. Applicat adl

Draw AB 186', and Ab 140', as before, and raise the two occult Perpendiculars be and BC; take the Diffance 152; and placing one Point of your Compasses in the Point A, cross the occult Line be in the Point c, and draw A c, producing it until it concur with BC, and finish the Triangles. The Course is two Points, or N.N.W. the Departure 58, the Difference of Longitude 77.

PROB. IV. A Ship Jails N.N.W 192', From the Latitude 40° North; I demand the Latitude, Departure, and Difference of Longitude? Plate 7. Fig. 31.

Draw the occult Line AB, and fet off the Course two Points, and the Diffance Ac 152, let fall the Perpendicular be, and so finish the Triangle A ba Then Ab will be found 140, or 2 20, which makes other Latitude 42° 20', by which you will find the Merid. Parts to

who two occube

one anionig h

ti Direct to

with BC. and

M.W. His Do-

see Newber I

186. Place 186' from A to B, and raile the occult Perpendicular EC until it meet with AcC continued, and fo finish the Triangle ABC. The Departure be is 18 min. The difference of Longitude BC 77 min.

PROBLEMS of Great Circle Sailing.

PROB. I. Two Places both in one Latitude, the Difference of Longitude being given; to find by what Latitudes and Longitudes the Arch paffes, and the Circle. Circle.

Example Suppose the Lizard and Penguin Island on New-found-Land. both in the Latitude 500 North, the Difference of Longitude between them 47 ; I demand by what Latitudes and Longitudes the Arch paffes, and the Courses and Distances from Place to Place?

care structed to to to to to to the Plate of Fig. 22. Draw the Line AE, and place the Tangent of 40 deg. the Complement of the Latitude from A to B; with 60 deg. of the Chords Iweep the Arch DE, and fet off 47 deg. the difference of the Longitude from t to D, and draw the Line AD, and place the Tangent 40 deg, the Complement of the Latitude from A to C; then draw the Lines BC upon the Arch DE, fet off every of deg. from E to D, and draw the pricked Lines Ab, Ac, Ad, &c. and where these Lines intersed BC, place the Letters b, e, d, f, g, &c. The distances, Ab, Ac, Ad, &c. being measurd on the Line of Tangents, are Tangents Complement of the Latitude, as follow.

2	Compl.	Lat.	welc	Marie Control of the	ALCOHOL: DULING WITH	CONTRACTOR OF STREET	avidiane. Vinutes	Marie Committee of the
為語	Ab Ac	19	5	are,		I design	A LE	oseCi ibusquali
はは	Ad	had a	ni	he La		2	hres 3 garcis I	the Point
では対対	An Ao	374 374 38	ni)	efore	ier bos	24	alla e l	PROT
100	Ai	184	P.	The	2 50 C &	0 3	the Lat	Summi

These are the Latitudes by which the Arch passes at every 5 deg. of conglude, from Brepresenting the Lizard, to C which represents the Land and had live word wide of the oblid

Having these Latitudes and Longitudes, you may find the Coarle and Distance from Place to Place, according to Merenter's Spiling.

Ac is the Tangent Compl. of the greatest Latitude by which the Arch passes, 12 1.

So the Latitudes and Longitodes of the several Points, b, e, d, &c, are as follow; likewise the Courses and Distances from Place to Place.

D. Long.	Lat.	Places.	Courfes.	Dift.
Blo	000		9	100
bs	31	From B to b	W.N.W. SW.	208 IA
e 10	311 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	b to e	W.N.W.4W.	206 A
PI15	152	e to d	PROPERTY OF STREET, SANGER, CARPEN,	\$150,000,000,000 (\$200,000)
f 20	7522	d to f		THE PERSON OF TH
g 25	522	t to g	W. ++	182
D 20	522	g to n	W.by S. # W.	J. JA
025	42		W.by S. + W.	ISA A
U-40	\$11	o to u	W.S.W. + W.	186 A
145	50:	- u to i	W.S.W. + W.	186 A
G47	050	i- to C	W.S.W.	79. 01A

PROB. H. Two Places differing both in Latitude and Longitude, in find the Lat. and Long. by which the Arch pulles, and the Courfes and Diffences from Place to Place.

Example. Suppose the two Places to be Trinity-Harber in Virginia, in the Latitude 36° North, and the Lizard in the Latitude 50° North, the difference of Longitude between them 68 deg. I demand by what Latitudes and Longitudes the Arch passes, and likewise the Gourses and Distances from Place to Place?

Distances from Place to Place?

Many 2008 Miller of Place 7. Fitting.

Draw the Line AF; place the Tangent of 40 deg. the Complement of the Lizard's Latitude, from A to C; with 60 deg. of the Chords describe the Arch EF, placing 68 deg. from F to E, drawing the Line

AE; then place the Tangent 45 deg. the Complement of Trinity Harbour's Latitude from A to B, and draw BC, letting fall the Perpendicular Ad; then set off every 5 deg. from E towards F, (because we sail from B) draw the prickt Lines Ar, A2, &c. the distance, Ar, A2, A3, &c. measured on the Line of Tangents, gives the Complements of the Latitudes by which the Arch passes at every 5° difference of Longitude from B, representing Trinity-Harbour, towards C, which is the Lizard.

	The D	istances A	1,	A 20 1	13, 6	. are as	follow.
S. Seelle	dist.	-deg.	-	1	o Remarks	Long.	Las.
	A1 82 83 84 85 85	48 4 46 4 44 4 43 V	77 0 0 0 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0	rudes and Longitudes by paffes, are as follow.	B 2 2 3 4	90 95 10 15 20	76 39 41 43
	A 6 A 7 A 8 A 9	41 ± 40 ± 40 ± 40 ± 40	74 % W W W	Arch	6 7 8 9	25 25 45 50 25 44 50 25 44 50	47 48 49 49 50 50
	An An An	19 19 19	artita ta _e tr	Therefore the which the	12	59 60 65 68	50 50 50 50

Hoving the Latitudes and Longitudes by which the Arch passes, you may find the Courses and Distances from Place to Place, by Mercator's Sailing, as is the Problem afore-going.

and the con North and the Line in the Lackade to North, the

Described Alle pines the Traggers of so day, the Complement of the Linux Statistics from A cost; when to deg of the Charce of th

The Courses and Distances from Place to Place, wrought by Mercator, are as follow in the Table.

oni

wide:

el po s. Vendali Sector

Missipe e Arch, ii is die

Places.	Courses.	Distances.		
From B to 1 From 1 to 2 From 2 to 3 From 3 to 4 From 4 to 5	N.E. ‡ E. N.E. by E. ‡ E. N.E. by E. ‡ E. N.E. by E. ‡ E. E. N. E.	303 271 264 247 236		
From 5 to 6 From 6 to 7 From 7 to 8 From 8 to 9 From 9 to 10	E.N.E.E. E.N. E. E.N. E. E. by N. E. E. by N. E.	226 208 187 200		
From 10 to 12 From 11 to 12 From 12 to 13 From 13 to C	E. by S. ; E. E. by S. ; E.	154 154 200 77		

Astronomical Problems wrought by the Plain-Scale.

PROB. I. The Suns Place or Distance from the next Equinostial Point, and the greatest Declination being given; to find the present Declination.

Example. The Sun's Place is 26 deg. ? of Tourns, that is, 56 deg. ? from the Equinoctial Point Aries; I demand his Declination?

With the Chord of 60 deg. describe the Semi-circle BDC, and raise the Perpendicular AD, and from the Point C set off the greatest Declination 23! deg. from C to E, and draw the line AE, then for the Sun's Longitude set off the Sine 56 deg. 4 upon the Line AE, from A to F; then from the Point F, take the nearest Distance FI to the Line AC, which measured on the Line of Sines, is 19 deg.! or else through the Point F draw GH, parallel to BAC; then AG measured on the Sines, or CH on the Chords, gives 192 deg. the Sun's present Declination Northerly.

PROB. II. The Sun's greatest and present Declination being given; to find his Place or Longitude.

Example. The Suns Declination is 1902 North, increasing; the reatest Declination (as before) 23° 1: I demand the Sun's true Plate 8. Fig. 34. 2 ace

Draw BC, and describe the Semi-circle BDC, raise the Perpendicular AD, and draw the Line AE, as in the former Problem, place the Sun's Declination 19 deg.; from B and C to H and K; draw the Line HK. which interfects AE in the Point F: the distance AF is the Sine of 560 the Sun's distance from Aries; fo that the Sun's Longitude is 26° 1 of Taurus.

PROB. III. The Sun's Place and greatest Declination being given, to find bis Bight Ascension.

Example. The Sun's place is 26 tof Taurus, the greatest Declination, as before; I demand his Right Ascension?

Plate 8. Fig. 24. Describe the Semi-circle AD and AE, as before, place the Sine of 16. the Sun's distance from Aries, from A to F; through the Point F draw the Parallel HK; then is FG the Sine of the Right Ascention, GH being Radius, which you may Measure after this manner: Place the Distance HG from A to o; upon o as a Center, with the distance PG, describe the occult Arch at m; a Ruler laid from A until it touch the Arch. will cut the Semi-circle BDC in the Point N; the Arch CN is the Measure of FG 44 2, the Right Ascension.

PROB. IV. The Sun's Declination given, (the greatest Declination being known) to find the Right Afcention.

Example. The Sun's Declination is 19 2 North increasing; I demand Plate 8. Fig. 34. the Right Ascension.

Describe the Semi-circle BDC, and draw the Line AD and AE as before; place the Declination 19° I from B and C to Hand K, drawing HK; FG being measur'd, as in the third Problem, gives the Right Afcention (as before) 54

PROB. V. The Latitude of the Place, and the Sun's Declination being gi-

wen, to find his Amplitude.

Example. In the Latitude 51 1 North, the Sun's Declination being 170 1 N, I demand the Sun's Amplitude? Plate 8. Fig. 35.

Draw BAC, and the Semi-circle BZC, the Perpendicular AZ; place the Latitude or Height of the Pole (10 ! from C to P, and draw AP fer off the Complement of the Latitude 180 from B to Q, and draw AQ the Equinoctian; place the Chord of the Declination 1701 from Q to D, and the Sine thereof from A to G, and draw the Parallel of declination DF. AF measured on the Line of Sines is 2904, the Am-PRO B.

PROB. VI. The Latitude of the Place, and the Sun's Declination being given, to find the Asconsional Difference.

Example. In the Latitude 51 deg. North, the Suns Declination

deg. 1 North; I demand the Ascensional Difference?

Describe the Semi-circle BZC, and draw the Line AZ, AP, AQ, and DF, as in the fifth Problem; FG is the Sine of the Ascensional Difference, to the Radius DG, which is thus measured: Place DG from A to 0; upon 0, as a Center, with the distance FG describe the Arch at E; a Ruler laid from A until it touch the Arch, gives the Point I; and

BI. 23 deg. 4 is the measure of the Ascensional Difference.

What the Ascensional Difference is, and the Use of it, may be seen

Prob. 5, 6, and 7, Chap. 8.

PROB. VII. The Latitude of the Place, and the Sun's Declination being given, to find when the Sun shall be due East or West.

North: I demand at what time he shall be due East or West?

Plate 8. Fig. 26.

Describe the Semi-circle BZC, and draw the Lines AZ, AP, AQ, and DO, as before; EO is the Sine of the time from 6, that the Sun is East or West to the Radius DO) to measure which, place DO from A to a, and upon the Center a, with the Distance EO describe the Arch at g; a Ruler from A, until it touch the Arch, gives the Point I, and Bl. 14 deg. 1 is the measure of EO, which reduced to time (Vid. Prob. 7. Chap. 8.) makes 59; which shews that the Sun is due East at 59 past 6 in the Morning, and due West at one minute past 5, or 59 min. before 6 at Night.

PROB. VIII. The Latitude of the Place, and the Sun's Declination being given, to find the Altitude of the Sun, being due East or West.

Example. In the Latitude 51% Noth, the Sun's Declination being 174 N. I demand the Sun's Altitude. being due East or West?

Plate 8. Fig. 26.

Describe the Semi-circles BZC, and draw the Lines AZ, AP, QA, and DO, as before. AE being measured on the Line of Sines, is 22° fm. Sun's Altitude being due East or West.

PROB. IX. The Latitude of a Place, and the Sun's Declination being to

Example. In the Latitude 51°; North, the Sun's Declination below

That U. Fig.

The utle of the Plain Scale.

and through the Semi-circle BZC, draw the Lines AZ, AQ and DO, and through the Point O draw the Line Lob, parallel to BC, BL or Cb mealur'd on the Chords, or AI on the Sines, gives 13° 3, the Altitude of the Sun at Six.

PROB. X. The Latitude of the Place, and the Sun's Declination being given, to find the Sun's Azimuth at Six.

North; I demand the Sun's Azimuth at Six? Plate 8. Fig. 36.

Describe the Semi-circle BZC, and draw the Line AZ, AP, AQ and DO, as before; draw Lob as in the Ninth Problem: IO is the Sine of the Sun's Azimuth to the Radius IL which is thus measured; Place IL from A to e, with the distance Io upon the Center e; describe the occult Arch at d; a Ruler laid to touch the Arch, gives the Point b, and Cb measured is 11 deg. 4 the Azimuth from the East or West. So that the Sun is E. by N. at 6 in the Morning, and W. by N. at 6 at Night.

PROB. XI. The Latitude of the Place, the Sun's Declination and Alti-

tude given, to find the Sun's Azimuth.

Example. In the Forenoon, in the Lat. 51 deg. 1 North, the Sun's Declination is 20 deg. 1 N. and his Altitude 43 deg. I demand his Azimuth?

Plate 8. Fig. 17.

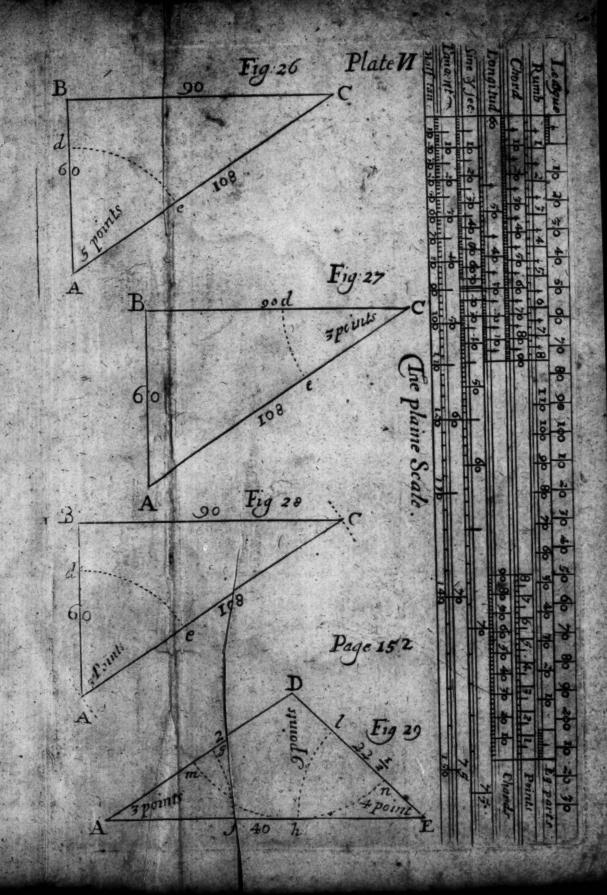
Describe the Semi-circle BZC, and draw the Lines AZ, AP, AQ and DF, the Parallel of Declination, as in the former Problembs; place the Altitude 43 deg. from B and C to d and e, and draw the Parallel de, which intersects the Parallel DF in the Point G, IG is the Sine of the Sun's Azimuth from the East towards the South, Id being the Radius; which to measure, place Id from A to c, and thereon with the distance IG describe the Arch at f; a Ruler laid from A to touch the Arch, gives the Point h, Bh 24 deg. 1 is the Measure of IG, East Southerly. So that the Sun's Azimuth is S.E. 65 deg. 1.

PROB. XII. The Latitude of a Place, the Sun's Declination and Altitude being given, to find the Hour from Noon.

Example. In the Afternoon, in the Latitude 51 deg. ! North, the Sun's declination is 20 deg. !, the Altitude 43 deg. I demand the Hour?

Fig. 8. Fig. 3 E being measured on the tine of Sires,

Describe the Semi-circle BZC, and draw the Lines AZ, AP, AQ, DF, and de, as in the 11th Problem; FG is the Sine of the Hour from Six, which to measure, place DF from A to u, and thereon with the distance FG sweep the Arch at K; a Ruler laid to touch the Arch, gives the Point o, and Co is the measure of FG 45 deg, which reduc'd into Time, gives three Hours, the time-Asternoon.



SECT. II. The Use of Gunter's Scale.

Shall not say any thing of the Description of the Scale, nor of the Projection of the Lines thereon, being the Logarithms of Numbers, Sines, Tangents, &c. placed upon a Scale. This is sufficiently Explain'd by Mr. Gunter, Mr. Wingate, and others.

To find a Whole Number in the Line of Numbers.

Among the figured Divisions, look for the first Figure of your Number; then for the second Figure, count so many tenths from the long Divisions on towards the end of the Rule, as the Units in the second Figure amount to: Then for the third Figure, count from the last Tenth so many Centesms as the Figure hath Units, and so likewise for the fourth Figure, count from the last Centesm so many Millions (or Thousands) as the same 4th Figure centains Units; this done, that shall be the Posnt where the Number propounded is represented on the Line of Numbers.

The Number given being 12, to find the Point on the Line of Numbers

that doth represent the same.

Therefore according to the Rule, i being the first Figure of this Number, I take the Division at the Figure i (in the middle of the Line) for the first Figure; then the second Figure being 2, I count two tenths from that i, and that is the Point representing 12, where commonly there is a small Brass Center, because it is often in use.

of Numbers and representing 144 overe required to be found upon the Line

For the first Figure in the Number being 1, I take (as before) the middle 1; then for the second Figure which is 4, I count 4 Tenths onwards, and from that Tenth I count 4 Centesms, or hundred parts sur-

ther, and that is the Point representing 144.

To find the Point representing 1728, first (as before) for 1000 I take 1 in the middle of the Line; secondly, for the second Figure being 7, I reckon seven Tenths onwards, and that is 700, thirdly, for the third Figure being 2, I reckon 2 Centesms from the 7 Tenths, which representeth 20; and then lastly, for 8 you may reasonably estimate 8 Millions, or thousand parts, from the last two Centesms, and that Point last sound will be the Point representing the Number 1728.

To find a Fraction, on broken Number, on the Line of Numbers.

ther Inches, Feet, Yards, Perches, or of any other Denomination; all other Fractions must be reduc'd into Decimals; and being thus consider'd, they are expressed as Whole Numbers upon the Line.

Note, If you call r at the beginning of the Line one tenth of any Integer, then 2 following must be two tenths, 3, three tenths, &c. and the r in the middle, one Integer; 2, two Integers, &c. and the so at

the end must be to Integers on and .

But if one at the beginning be one Integer, then one in the middle must be 10 Integers, and 10 at the farther end 100 Integers, and all the intermediate Figures, 20, 30, 40, 50, 60, 70, 80, 90, so many Integers; and every longest Division between, as 21, 22, 23, 24, 25, 26, 80. single Integers; and the shortest of those Divisions, tenths of those Integers; and so in proportion, as 10, 10, 100, 100, 100, 1000, 1

PBOB. I. Two Numbers being given, to find a third Geometrical Propertion, and to a third a fourth, and to a fourth a fifth, &c.

Example. Let the two Numbers given be 2 and 4, unto which it is required to find a third Proportional, &c. Therefore for the performance hereof by the Line of Numbers, extend the Compalles from one of the Numbers given to the other; this done, if you apply the same extent either upwards or downwards from either of the Numbers propounded, the moveable Point of the Compasses will fall upon the third Proportional required; and so the same extent being apply'd the same way from the third, the moveable Point of the Compasses will fall upon the fourth Proportional, and from the fourth to a fifth, &c. and so to more, as you please; for if you extend the Compasses from a to 4, and turn the Compasses upwards, with one Point resting on 4, the moveable Point will fall on 8, the third Proportional, and from 8 to 16, from 16 to 32, from 32 to 64, and so sorward.

PROB. II. One Number being given to be multiply'd by another Number, to find the Product.

To resolve this Question Arithmetically, whether by Natural or Artificial Numbers, the Proportion is; As I to the Multiplicand, so is the

Multiplyer to the Product.

Example. Let the Multiplicand 8 be multiply'd by 5 the Multiplyer; extend the Compasses on the Line of Numbers, from 1 to the Multiplicand; the same extent being apply'd the same way from the Multiplyer; will cause the moveable Point to fall on the Product; for if you extend the Compasses from 1 to 8, the same extent the same way will reach from 5 to 40: And so if you would now Multiply any

Number

Number by 8, as the Compasses now stand, it is but placing one Foot in any Number given, and the moveable Point will fall on the Product; as if you place one Foot in 9, the other will fall in 72, and so from 8 it will fall in 64, and from 7 to 56, and from 6 to 48: The extent of the Compasses may be taken from so at the surther end of the Line, which you may call r.

PROB. III. One Number being given to be divided by another Number, to find the Quetient.

For the Resolution of this Problem, the Proportion is thus: As the

Divisor is to 1, so is the Dividend to the Quotient.

Example. Let 40 be the Dividend, and let the Divisor be 8: therefore extend the Compasses on the Line of Numbers from the Divisor 8 to 1; this done, the same extent the same way shall reach from the Dividend

40 to the Quotient which is 5.

Another Example, Let 750 be a Number given, to be divided by 25; therefore example Compasses downwards from 25 to 1, then applying that Extent the same way from 750, the moveable Point will fall upon 30, which is the Quotient required.

Now to know of bow many Figures a Quotient ought to confist.

It will be necessary to observe how many times the Divisor may be written under the Dividend, according to the Rules of Divison; for of

fo many Figures shall the Quotient be composed.

For Example: 12231 being given to be divided by 27, which faid Number may be written, according to the Rules of Division, three times under the Dividend; therefore the Quotient shall consist of three Figures, and so of any other.

PROB. IV. Three Numbrs given, to find a fourth in a direct Proportion, as in the Rule of Three Direct.

To resolve this Problem, the Proportion is thus: As the first Num-

ber given is to the second, so is the third Number to the fourth.

To perform this on the Line of Numbers, you must extend the Compasses from the first Number or Term given, to the second; which done that Extent being apply'd the same way from the third Term, will cause the moveable Point to fall on the fourth Term required.

Example, If the Circumference of a Circle whole Diameter is 7 Inches, be 22 Inches; what Circumference will a Circle have, whole

Diameter is 14 Inches?

Therefore extend the Compasses in the Line of Numbers from 7 in the first part thereof, unto 14 in the second; this done, the same Extend

X 2

being

being apply'd the same way from 22, will make the moveable Point to

fall upon 44 Inches, the Circumference required.

Example 2. Let the Circumference of a Circle be 22 Inches, and the Diameter thereof 7 Inches; how much shall the Diameter of a Circle be, whose Circumference is 44 Inches?

Extend the Compasses downwards from 22 in the second part of the Line, to 7 in the first; which done, that Extent being apply'd the same

way from 44, will reach to 14, the Diameter fought.

PROB. V. Three Numbers given, to find a fourth in an Inversed Proportion (or in the backward Rule of Three.)

To resolve this Problem, the Proportion; As the third Number is to the second, so is the first to the fourth.

Example. If 60 Men make a Trench in 45 Hours, in what time will

40 Men make fuch another?

To perform this by the Line of Numbers, extend the Compasses from the first of the Numbers given to the third, having both the same Denomination: This done, if the Extent be apply'd backward from the second Number, the moveable Point will full upon the fourth Number required: So that if you extend the Compasses from 60 to 40. (those Terms being of the same Denomination, viz. of Men) this done, the Extent being apply'd backward from 45, will reach to 67,5, the fourth Number you look for. I conclude therefore, that 40 Men. will perform as much in 67 Hours and a half, as 60 Men will do in 45 Hours.

PROB. VI. Three Numbers given; to find a fourth in a Duplicate Proportion.

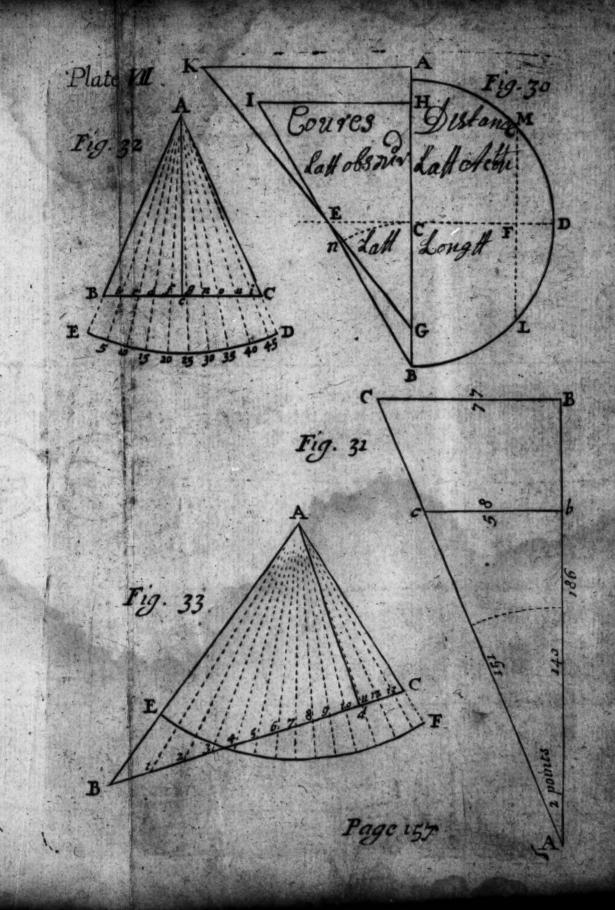
The Use of this Problem is in Proportion of Lines to Superficies, or of Superfices to Lines. Now if the Denomination of the first and second Terms be of Lines, then extend the Compasses from the first Term to the third of the same Denomination; this done, that Extent being apply'd twice the same way from the second Term, the moveable Point. will stay upon the fourth Term required.

Example 1. If the Content of a Circle whose Diameter is 14 Inches, be 154 Inches; what will the Content of a Circle be, whose Diameter is

28 Inches?

Here 14 and 28 having the same Denomination, viz. of Lines, I extend the Compasses from 14 to 28; then applying that Extent the same way from 154 twice, the moveable Point will fall on 616; the fourth proportional fought; that is, first, from 154 to 308, and from 208 to 616.

But



But if the first and third Terms have the Denomination of Area's, or Contents, and the *Duasitum* be a Line, then extend the Compasses upon the Line of Numbers, unto half the Distance between the first and third Term of the same Denomination, so the same Extent will reach from the second Term given to the sourch required.

Example 2. If the Diameter of a Circle, whose Area is 154 Inches, he 14 Inches, what Diameter will a Circle have, whose Area is 616 Inches? Divide the Distance betwixt 154 and 616 into two equal parts, then set one Foot in 14, the other shall reach to 28, the Diameter required.

PROB. VII. Three Numbers given, to find a 4th in a Triplecate Propertion

The Use of this Problem consisteth in the Proportion of Lines and

Solids, & contra.

If therefore the first and third Terms have the Denomination of Lines, (as the Diameters of Spheres, or Sides of Solid Bodies) extend the Compasses upon the Line of Numbers, from the first Term to the third; this done, and that Extent apply'd three times the same way from the second Term, will cause the moveable Point to fall upon the fourth Term required.

Example 1. If an Iron Bullet, whose Diameter is 4 Inches, weighethe Pounds, what is the Weight of another Iron Bullet whose Diameter

is 8 Inches?

Therefore extend the Compasses on the Line of Numbers from 4 to 8; and that extent apply'd the same way three times from 9, the move-able Point will first fall upon 18, then from 18 to 36; and lastly, from

36 to 72, the Weight required.

But if two given Terms be Weight or Contents of Solids, and the Diameter of a Sphere, or Side of a Cube is fought, then divide the space between the two given Terms of the same Denomination into three parts, and that Distance shall reach from the third to the fourth Proportional.

Example 2. If an Iron Bullet that weigheth 9 Pounds be 4 Inches diameter, what Diameter shall the Shot of Iron be, whose Weight is 72?

Divide the Space between 9 and 72 into three parts, and that third. part shall reach from 4 to 8, the Diameter required.

PROB. VIII. To find the Square Root of any Number under 100000

The Square Root of any Number is always the mean Proportional betwixt 1 and the Number propounded; but yet with this general Caution, viz. If the Figures of the Number be even, that is, 2, 4, 6, 8, 10, o.c. then you must look for the Unit, or One, at the beginning of the Line of Numbers, and the Number given in the second part, and

the Root in the first part; or rather reckon 10 at the end to be the Unit, and then both Root and Square will fall backwards towards the middle, in the second part of the Line; but if they be odd, then the middle one will be best to be counted the Unit, and both Root and Square will be found from thence forward towards 10; so that according to this Rule, the Square Root of 9 will be found to be 3; the Square Root of 64, will be 8; the Square Root of 144, will be 12; the Square Root 1444, to be 38; the Square Root of 57600, to be 240. And to know how many Figures any Root ought to consist of, put a prick over the first Figure, the third, the fifth, &c. beginning from the Right-Hand, and as many pricks as are noted, so many Figures there must be in the Root.

PROB. IX. To find the Cube Root of any Number under 1000000000 ;

The Cube Root is always the first of two mean Proportionals, between 1 and the Number given, and therefore will be found by dividing the Space between them into three equal Parts. And to find how many Figures will be in this Root, you must prick over the first Figure, the fourth, seventh, beginning at the Right-Hand; and so many pricks as you find, so many Figures must be in the Root, which Root may be easily found, with these Cautions:

the Unit is best placed at i in the middle of the Line, and then the Cube and Root will both fall forwards towards to at the end of the

Line.

Hand, you man place the Unit at 1 in the beginning of the Line, and the Cube in the second part of the Line, then will the Root be found in the first part of the Line.

If the last Prick fall on the last Figure but two, then place the Unit at at the end of the Line, and then the Cube and Root will both fall backward, and be found the second part of the Line of Numbers.

These Notes being observed, the Cube Root of 1728, will be found to be 12; and the Cube Root of 17576, will be 26; and the Cube Root of 438976, will be found 76; and the Cube Root of 8120601, will be 201; the Cube Root of 11390625, will be 225.

PROB. X. How to work a Proportion in Sines alone; or, three Sines being given, to find a fourth Proportional.

Example: As Sine 22° 45', to Sine 47° 30'; so is Sine 23° 15', to a fourth Sine required.

This

This Problem is wrought on the Line of Sines, as the fourth Problem is on the Line of Numbers. Take the Extent from the Sine 22° 45' on the Line of Sines, to the Sine 47° 30'; the same Extent shall reach the same way, from the Sine of 23° 15', to the Sine of 48° 50', the fourth Sine required.

PROB. XI. How to work a Proportion in Tangents alone; or, three Tangents being given, to find a fourth Proportional.

Example. As Tangent 42 deg. 40 min. to Tangent 15 deg. 20 min. fo is Tangent 29 deg. 8 min. to the fourth Tangent required.

This Problem is wrought on the Line of Tangents, as the former

Problems on the Line of Sines.

Extend the Compasses on the Line of Tangents, from the Tangent 42 deg. 40 min. to the Tangent 15 deg. 20 min. the same Extent shall reach the same way, from the Tangent 39 deg. 8 min. to the Tangent 13 deg. 35 min. required.

Example. 2. As Tangent 14° 58, to Tangent 39°15; so is Tangent

47º 18', to a fourth Tangent required.

On the Line of Tangents, the Tangents above 45°, increase from 45° to 46°, 47° to 50°, 60°, 60°, 60°, backwards towards the beginning of the Line: Therefore in working this Proportion, the same Extent that reaches from 14° 58', to 39° 15', shall reach the contrary way from 47° 18', to 73° 10', the sourth Tangent required.

Example 3. As Tangent 21° 30', to Tangent 37° 20'; To is Tangent

42° 40', to a fourth Tangent required.

The Extent from the Tangent 21 deg. 30 min. to the Tangent 37 deg. 20 min. if apply'd the same way, from Tangent 42 deg. 40 min. will fall beyond 45 deg. at the end of the Line: Therefore to remedy this Inconveniency, having the distance between Tangent 21 deg. 30 m. and Tangent 37 deg. 20 min. place one Point of your Compasses in the Tangent 45 deg. and let the other Point fall backwards towards the beginning of the Line, and it will rest on the Tangent 27 deg. 20 min. This Point let remain fixed, and close the other Point which stands in 45 deg. to the Tangent 42 deg. 40 min. then keeping this distance, place one Point in Tangent 45 deg. the other will fall upon the Tangent 60 deg. 45 min. required.

PROB. XII. How to Work a Proportion in Sines and Tangents together.

Example 1. As Sine 22° 30', to Sine 37° 10'; Se is Tangent 19° 40', to a fourth Tangent required.

The

The Extent on the Line of Sines from 22 deg. 30 min. to 27 deg. 30 min. thall reach on the Tangents from 19 deg. 40 min. to 22 deg. 25 min. required.

Example 2. As Tang. Compl. 60° 15', to Sine 56° 45; fo is the Radius

to a Tangent required.

Because there is a Tangent in the first place of the Proportion, and likewise a Tangent in the fourth, therefore this Proportion must be chang'd by puting Radius in the first Place: and instead of the Tang. Compl. in the first place, take Tangent 60 deg. 15 min. (if it had been a Tangent, you must have taken the Tang. Compl.) and then the Proportion will remain thus:

As Radius to Sine 56° 45'; fo is Tangent 60° 15' to the Tangent

required.

The Extent from Radius, Sine 90°, to the Sine 56° 45' on the Sines, shall reach from Tangent 60° 15', to Tangent 55° 40' required.

Example 2. As Radius to Tangent Compl. 60° 15; fo is Tangent 55° 40',

to a Sine required.

This Proportion must be chang'd, because there is Radius or Sine 90 deg. in the first Place, and a Sine required. Instead of the Tang. Compl. 60 deg. 15 min. take the Tangent 60 deg. 15 min. and put Radius in the the third Place, and so the Proportion follows:

As Tangent 60 deg 15 min. to Tangent 55 deg 40 min. so is Radius to the Sine sought. Therefore the Extent from the Tangent 60 deg. 15 min. to Tang. 55 deg. 40 min. shall reach from Radius, or Sine 90

deg. to Sine 56 deg. 45 min. required.

PROB. XIII. How to Work Numbers and Sines together.

Example. As 56 to 106; so is Sine 29° 30 to a Sine requirep.

Extend the Compasses on the Line of Numbers, from 56 to 106, the

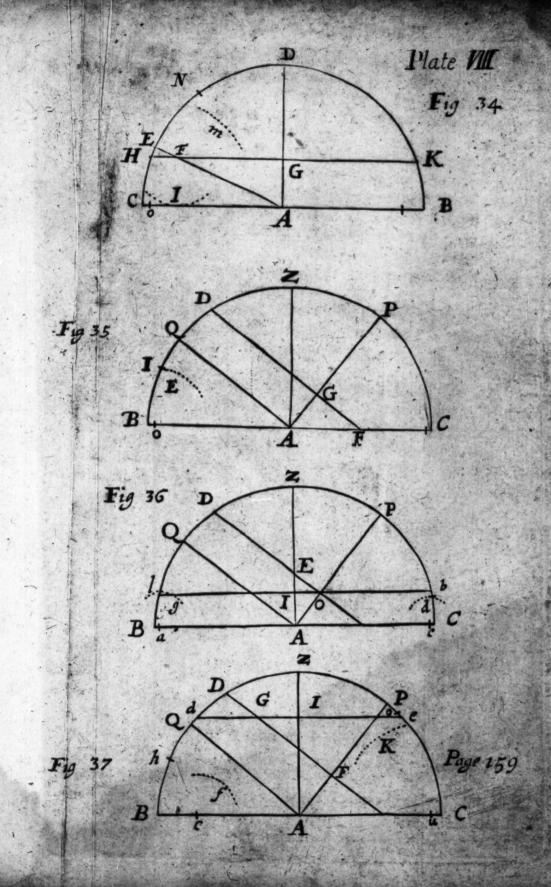
fame Extent shall reach the same way on the Line of Sines from 29 deg. 30 min. to 68 deg. 30 min. required.

PROB. XIV. How to Work by Numbers and Tangents together.

Example. As 202 to 52; so is Tangent 730 52 to Tangent required.

The extent on the Line of Numbers, from 202 to 52, should reach

The extent on the Line of Numbers, from 202 to 52, should reach the same way on the Line of Tangents from 73 deg. 52 min. to the Tangent required; but the Compasses so extended sall beyond the end of the Line, therefore this Defect must be remedy'd, as in the third Example, Problem XII by placing the said Extent in Tangent 45 deg. and letting the other Point sall backwards in the Line, which being fixed, close the other Point to 73 deg. 52 min. and then placing your Compasses again in 45 deg. the moveable Point shall sall on 41 deg. 40 min. the Tangent required.



Sect. III. The Description and Use of the Sinical-Quadrant.

THIS Instrument is commonly made of Brass, Box or Pear-Tree being a Quadrant or fouth part of a Circle; the Limb thereof being divided into 90 equal Parts or Degrees, is numbered with 10, 20, 30, 40, &c. unto 90; and also divided into 8 equal parts, which are the Points of the Compass, and dothe represent any of them according as the Nature of the Question requireth.

The two Sides thereof are commonly divided into 60 (or fometimes into 100) equal parts, and numbered from the Center with 10, 20,

30, Oc.

Likewise there is an Index that moveth upon the Center of the Quadrant, and reacheth without the Limb, always divided with the same equal parts as the Sides, and numbered as before.

And from those equal parts on the Sides, are drawn Parallels throughout the whole Superficies of the Quadrant, croffing one another at

Right-Angles.

And the Lines of Fives and Tens are commonly prick'd for Distinction fake; which said Lines and Parallels do represent the Sines and Sine Compl. of an Arch (divided into equal parts) [which I suppose is the reason why it is called a Sinical Quadrant.]

But here note, that these Parallels that proceed from the Side AB, (in the Figure of the Sinical-Quadrant) are for Distinction called Sinical-Parallels, and those Parallels that proceed from the Side CD, are

called Co-Sinical-Parallels.

Now these Distinctions being observed, we shall proceed to the Use, in the Solution of several Problems in Navigation, and in working a Traverse at Sea, &c.

PROB. I. The Course and Distance being given, to find the difference of Latitude and the Departure from the Meridian.

Course the fifth Rhomb, distance 45 Leagues.

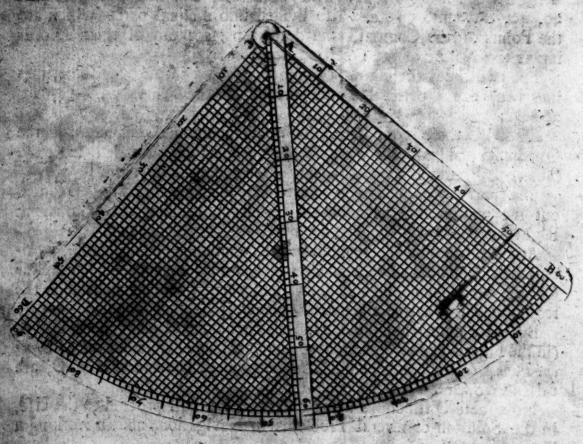
Therefore first put the Index to the fifth Rhomb, which being done, find the distance given thereon, which is 45 Leagues; and in the Sinical-Parallels you will find the Index to cut 25 Leagues, which is the difference of Lattrude, and in the Co-Sinical-Parallels it will cut 37 ± which is the departure.

PROB. II. The Course and Difference of Latitude being given, to find the Distance run, and the Departure from the Meridian.

Course the Fifth Rhomb, Difference of Latitude 37 - Leagues.

Set the Index to the Course, and find the Difference of Latitude in

the Sinical Parallels, and where that doth interfect on the Index, is us, which is the Diffance required; and where it doth meet the Co-Sinical Parallels, there is 25 Leagues, the Departure from the Meridian.



PROB. III. The Course and Departure being given, to find the Diflance, and Difference of Latitude.

Course the fifth Rhomb, Departure 37! Leagues.

Set the Index to the Course found in the Limb, and in the Co-Sinical Parallels find the Departure 37 1 (being numbered in the Margin;) and where it doth meet with the Index, it sheweth the Distance run to be 45 Leagues; and where the Index meeteth with the Sinical Parallels, there you will find the Difference of Latitude to be 25 Leagues.

PROB. IV. The Distance and Difference of Latitude being given, to find the Course and Departure.

Distance 45, Difference of Latitude 25 Leagues.

Firf, Find the Distance run upon the Index, and then move the Index

dex until it doth Interfect the Difference of Latitude in the Sinical Perallels; and at this Position of the Index, look in the Limb, and there you will find the Course to be the fifth Rhomb which was required; and where the Sinical Parallel of 25 doth meet with the Co-Sinical Parallel under the edg of the Index, that will shew you the Departure from the Meridian 37 \(\frac{1}{2}\) Leagues on the Side CD.

PROB. V. The Distance run, and Departure from the Meridian being given; to find the Course and Difference of Latitude.

Distance 45 Leagues, Departure 37 + Leagues.

First, Find the Distance run on the Index, put that to the Departure in the Co-Sinical Parallels, and that Point shall cut in the Sinical-Parallels the Disterence of Latitude 25 Leagues, and the Edg of the Index shall shew in the Limb the Course, which is the fifth Rhomb, which was required.

PROB. VI. The Difference of Latitude, and Departure from the Meridian being given, to find the Course and Distance.

Diff. of Lat. 25 Leagues, Departure 37 1 Leagues.

First, Find the Difference of Latitude in the Margin of Sinisal Parallels, and also the Departure in the Margin of the Co-Sinical Parallels; and note where those Parallels meet each other, in that Point put the Index; then on the edg of the Index shall be cut 45 Leagues, the Distance, and on the Limb the edg of the Index will shew the fifth Rhomb which was required.

PROB. VII. To know how many Leagues you must sail upon any Point of the Compass, to raise or depress a Degree of Latitude by the Sinical-Quadrant.

To perform this, you must lay the Index upon the Point of the Compass, and see where the Sinical Parallels of 20 Leagues (which is one Degree in the Equinoctial) doth intersect the edg of the Index, there will be shewn the quantity of Leagues you must fail, to raise or depress the Pole upon any Point of the Compass.

As for Example, on the third Rhomb.

If you lay the Index on the third Rhomb, the Sinical Parallel of 20 will shew 24 Leagues, which you must sail on that Point to raise or depress one Degree of Latitude, and that Point on the Index will shew in the Sinical Parallels, the Departure from the Meridian to be 13 Leagues 4

PROB

Striked Divided and a section of

208. VIII. Shewing the Use of the Sinical-Quadrant in working a Treverfe at Sea.

The Sinical Quadrant is a plain and ready Instrument for this purle, and is commonly employed for the working thort Traverses at 1. I'll give one Example of 24 hours run, in the manner as it is ally placed on the Log-Board, and how it may be taken off, and wrought by this Instrument.

Examp. Admit a Ship at Sea, and bound to the Northward, steers way her Course North-East, but then meeting with a contrary and huffling Wind, the makes feveral Courfes as is here under expressed in

this Table, after the Form of the Log-Board.

		The	Fa	rm of the Log-Bo	pard.
ii.	K	HK	F	C.	W.
2 4 6	4 3	0 I .	00	N.E E.N.E.	N. W. N. ±E.
6	33 (3)	0 0	00		
13	3	0	0.0	E. <u>₹</u> N.	N.N.E.
2	4 3	1	00	E.S.E E.	N.E.
6	3 4	1 0	00		- 1 (a)
10	5	0 I	0	N. by W. ± W.	

in this Table there are fix Columns; the first distinguished with H. thews the Time, or Hours which these Courses and Distances are thus fet down upon the Log-Board, that is, at 2 of the Clock, 4 of the Clock, 6 of the Clock, &c. the Log being commonly hove every two Hours.

The second, third, and fourth Columns shew the Knots, Half-Knots, and Fathoms, that the Ship runs upon any Courfe in the space of half

a minute, meafured by the Log-Line:

The fifth Column contains the Course steered by the Compass, but the Les way that the Ship makes, is left to the Discretion of the Calculator, to be allow'd according to the Mould of the Ship and the Sail she ears, and also having respect to the Wind and Sea at the same time.

The firth Column shews on what Point of the Compass the Wind is, the wind is the Course be large or upon a Wind. Thus

Thus much for the form of the Log Board, and the manner of fetting down the Couries and Diffances thereon. Now fomewhat briefly, how to take off (as they call it) this account from the Log Board, thereby to compute the Ship's true Courie and Diffance by the Sinical Qua-

drant, or other Instrument or Arithmetical Calculation.

Tis usual for the Master, his Mates, and all others that are delirous to keep a Reckoning of the Ship's way, every Day at Noon, when the Ship is at Sea, to take an account of the several Runs upon the Log Board for 24 hours last past, taking notice of the Wind, and other Accidents allowing for every Knot and Half-Knot, so many Miles and half Miles run in one hour, and four times so many in a Watch or four hours. And because 'tis usual to heave the Log but twice in a Watch, or every two-hours, and the Course set down accordingly; therefore the Knots and Half-Knots upon the Log-Board for each Course must be added together, and the Total double, gives the Number of Miles upon each respective Course: As for Instance, in this Example in the Table, under the Letters H, K, HK, &c. in the first Line, you will find 4 Knots N.E. which being doubled; give 8 Miles, the Distance upon that Course: But know for the more orderly working the 24 hours Run, it is convenient to frame a Table, after the form of this here annexed.

The Operation of these Traverses by the Sinical-Quadrant.

Index upon the fourth Rhomb, or 45° from the Meridian, you shall find the Distance run 8 Miles upon the Index, to interfect at 5½ in the Sinical Parallels, which is the Northing, and is to be placed in the N. Column, and to cut 5½ in the Co-Sinical Parallels, which is the Easting, to be placed in the E. Column; and the reason why the Difference of Latitude and Departure, now sound by the Sinical Quadrant, is set under the N and E. Columns, is because the Course is between the North and East.

Courle.	Dift.	N.	S.	ng and W Quadran	W.
N.E.	Miles.	Miles.	Miles.	Miles.	Miles
E. by N. E. & S.	19	03 ½	1 1	18 =	
. E. by E. & E N. N. W. & W.	19	17	10	18 1	00
Sun		26	12 4	66½	00

2. The fecond Course is East by North 19 Miles upon a Wind, the Course steered is East North-East the Ship lying within 5½ Points of the Wind, and allowing one Point for Leeward way, the true Course is, as before, E. by N. Therefore Place the Index to the seventh Point, or 78° ½ from the Meridian, and by 19 Miles, the distance, there will be cut 3½ Miles, in the Sinical Parallels, which is the Northing and 18½ Miles in the Co-Sinical, which is the Easting.

3. The Third Course is (allowing, as before, one Point for Leewardway) East ½ a Point Southerly, and the Distance 24 Miles; therefore lay the Index to 7½ Points, or 84 deg. ¼, and by 24 found on the Index shall be cut 2¼ in the Sinical Parallels, which is the Southing, and 24 fere in the Co Sinical, which is the Easting of this Course and Distance.

And what hath been faid of these three Courses, the same is to be understood of the rest in the foregoing Table, giving the same Allow-

ance as before, the Ship being still by a Wind.

Having thus therefore, according to these last Instances found the Northing and Southing, Easting, and Westing of these several Courses and Distances, and placed them in their proper Columns, sum up the Miles in those Columns, and orderly subscribe their Total, as in this Example.

The Sum of the North Column is 26 Miles, of the South Column

12 to of the East, 66 to and of the West, 9 Miles.

Then compare the North and South Columns together, and also the East and West; and deduct the lesser from the greater, as in the fore going Table; The Southing is to be subtracted from the Northing, and the Westing from the Easting; the Remainder Northerly 13 4 Miles, is the Difference of Latitude; the Residue under the East Column, 57 1

Miles, is the Departure to the Eastward of the Meridian.

And if the direct Course, and nearest Distance from the place where the Ship began this Traverse, to that where she now is supposed to be, were required, 'tis readily computed by the Sinical Quadrant. And, to perform this, find where 13 \(\frac{1}{2}\) in the Sinical Parallels intersect the Co-Sinical Parallel of 57 \(\frac{1}{2}\) and bring the Index to that Point, and by the Index in the Limb shall be shewn the Angle of the Course, 76 deg. \(\frac{1}{2}\) or 7 Points from the Meridian, viz. E. by N. and the Distance run found on the Index, will be 59 Miles \(\frac{1}{2}\).

And thus after the form of this first Example, you may find the Difference of Latitude and Departure from the Meridian of any 24 Hours

Traverse, and likewise reduce it to one Course and Distance.

And what is here in particular applied to the Sinical Quadrant, the same is to be understood of the other Instruments, it being only a Repetition of the first Case, by the Course and Distance given, to find the Dister-

Having spoken somewhat of the Log-Board, and of the Use thereof, I think it not amiss here to say something of the Log-Line, and Half-

Minute Glass.

An Advertisement concerning the Log-Line, and Holf-Minute Glass.

Seeing that the manner of keeping a Reckoning of the Ship's Way (by our English Navigators) is commonly by the Log-Line, and Half-Mimute Glass, there ought to be greater care had to the truth of them but it hath been an antient Custom to measure seven sathom between Knot and Knot upon the Log-Line; which way of measuring hath been grounded upon a meet Conjecture, that sive of our Feer make a Pace and a thousand such Paces make a Mile, and sixty such Miles make a Degree, so that a Degree should contain 300000 of our Feet, and one Mile (or Minute) 5000 Feet; and because an half-Minute of Time is the 120th part of an Hour, the Log-line should answer to that Proportion, and be the 120th part of a Mile, which by this account is 412 Feet between each Knot on the Log-line.

But this erroneous Computation hath been sufficiently refuted by

Mr. Oughtred, Mr. Norwood, and others.

Mr. Oughtred in his Circles of Proportion, p. 153, doth there propose 662 Statute-Miles to answer to one Degree upon the Earth, each containing 5280 Feet; so that according to this Computation, there

is 349800 Feet in one Degree.

And Mr. Norwood, in his Seaman's Practice, doth declare, That (by a worthy and commendable Experiment of his) he found a Degree of the Circumference of the Earth and the Sea, to contain 367200 of our English Feet. But he further consenteth, That because the Ship's way is more than doth really appear by the Log-line, and because it is more safe to have the Reckoning to be somewhat before the Ship, together with the Evenness of Numbers to allow but 360000 Feet to be one Degree, and consequently 6000 English Feet to be one Minute, or the 60th part of a Degree (vulgerly called a Mile) which Number being divided by 120, giveth 50 Feet between Knot and Knot on the Log-Line; so that upon this ground, if a Ship runneth out one of those Knots in half a Minute, she runneth one Mile (or the fixtieth part of a Degree) in an bour, or one league and one mile in a Watch, or a hours.

Likewise Mr. Picart has lately measured the length of one degree in France, and finds it to contain 365184 English Feet; nearly agreeing with Mr. Norwood. But notwithstanding these Experiments.

(together

(together with the Confent and Approbation of other accomplished Mathematicians in their Books of Navigation) have sufficiently detected this Error, yet this Truth hath not had that Entertainment, as the Excellency thereof hath deserved, because Custom hath so long prevailed

against Reason.

Mr. Norwood, in his fore-mentioned Book, hath affigued fome Reafons why he supposeth this Error hath been so long received and tolerated. I shall forbear to mention them, referring you to the Book it felf. But I shall assign one Reason more, which I have observed from Experience, which I hope, will in some measure help to prove the Truth of Mr. Norwood's Experiment, and that the Log-line (as commonly divided) may be proved to be too fhort for true measure: For I have observed, that if a Half minute Glass be made of its due length. according to true Time, that then their Reckonings intolerably outrun the Ship, and they continually complain, that those Glasses are too long: But if they have a Glass that is 5 seconds shorter than true Time, they do reasonably well agree with the Log-line in their Reckonings; because one Error doth ballance another, viz. short measure, and short time. Yet notwithstanding this Concurrence and Affinity between this Log-line, and short Half-minute Glass, it is apparent that they are both Errors, and therefore to be rejected: For I suppose it would quickly appear, that if the Log-line where of its due length and measure, i. e. so Foot between each Knot, and the Half Minute Glass of its due length, according to true Time, there would doubtless be a greater Harmony and Concurrence of Truth, and Navigation be of more certainty than it is.

So that now it doth plainly appear, by this above mentioned Observation, that the Log-Line, as commonly divided, is too short, according to Mr. Norwood's Experiment, because the necessity of keeping a Concurrence in the Reckonings, is by a Glass that is too short by 5 se-

conds for the true time of half a minute, or 30 feconds.

But here I shall give you a Rule, to prove whether a Half-Minute Glass be of true length or not; the way is generally approved to be very true, and what I have many times made Experience of, and can attest it by my own Knowledg. The Experiment is mentioned by Mr. Philips, in his Advancement of Navigation, and is thus to be performed.

An easy and exall Way to measure a Half-Minute Glass, or any small Portion of Time.

Take a Bullet of any weight whatfoever, and make fast a piece of Thread or Silk to it, being 38½ Inches in length, from the Center of the Bullet unto the end of the Thread, where a Noose must be made

to hang it on a small Pin, which is to be fastned to any Place where

the Bullet may fwing freely.

This Pendulum being thus prepared, hang its Noose on the Pin, the Thread being exactly 38½ Inches between the Center of Gravity, and the Center of Motion, each of the Swings of this Bullet (being either swift or slow) shall be a true second of Time, so that 60 of these Swings will be the true length of a Minute, and 30 the true length of half a Minute. So by this ingenious Experiment you may know which of all your Half-Minutes is a true Glass: and if you have no Glass, you may measure any small Portion of Time by this Experiment; for half a second of Time is discovered every time the Pendulum doth pass the Perpendicular, that is supposed to fall from the Pin whereon the Pendulum doth hang.

But if it should be objected, That at Sea, when the Ship is thrown to and again by the Violence thereof, that then the Vibrations of the Pendulum may by that means be obstructed, and so the Swings to be

uncertain.

A Remedy there is found against this Objection, by making the Thread 7 Inches shorter, and thereto make a small Knot, which Knot you are to hold between your Finger and Thumb, and then with the motion of your Hand, to cause the Bullet always to ascend to an Angle of 60 degrees (from the Perpendicular) and so shall each Swing be equivalent to those before; so that if a Ship be tossed by the Violence of the Sea, yet a Man may make shift to try this Experiment, and to measure a true Half-Minute of Time without the help of a Glass.

Sect. IV. The Description and Use of the Plain Chart.

IN the middle is a Center, upon which there is an occult Circle described, which is divided into 32 Parts or Points; by which are drawn several Lines quite through the Chart, representing the Rhombs or Points of the Compass, and upon these Lines are other Circles described and Rhomb-lines drawn, parallel to the former.

Then is the form of the Land poutrayed upon it, and also a Scale of

Leagues to measure the Distances of Places.

There is also a Meridian Line equally divided upon the Chart, which discovereth the Latitude of any Place. The several Uses follow.

1. To find the Latitude of any Place upon the Chart.

Take your Compasses, and set one foot in the Place required, and extend the other foot to the nearest Distance of an East and West Line, and note where that Line doth cut the Meridian-line, (that is divided

Bb

into Degrees) then fet one foot where it interfects the Meridian-line, and the other foot will reach upon the Meridian-Line, to the Latitude of the Place required.

2. To find the Distance of one Place from another.

take your Compasses, and set one foot in one of the Places, and the other foot in the other place, then with the Extent between your Compasses applied to your Scale of Leagues, will give the measure of the

Distance of the two Places.

But if the Distance between the two Places be greater than the length of the Scale, then first extend your Compasses upon the Scale to the whole length thereof, and with that extent set one foot in one of the Places required, then direct the other foot towards the other Place by the help of a Scale or Ruler, in a Right-line; and if the Distance be great, you must turn the Distance between the Compasses over twice, thrice, or oftner, until you come to the other place required; and if it falls out, that the last extent doth fall over the second place, you must then, from the last place where the Compasses stayed, draw in the other Point, until it touch in the Place required, and measure that upon the Scale of Leagues. As suppose your Seale were an hundred Leagues; and if you turn your Compasses two or three times over, then is the Distance so many hundred Leagues, and that small Distance more, which being measured upon the Scale, it giveth the odd Leagues, and so consequently the Distance required.

3. To find upon what Point of the Compass one Place beareth from another.

If from the two Places, propounded there be a Rhomb-line that lieth directly from Place to Place, then is there no more trouble in it, but to look upon the small Compass upon the Chart, and see upon what

Rhomb it is they bear one from another.

But in case a Rhomb-line doth not lie directly from one Place to the other, then extend your Compasses from the first Place in the nearest Distance to the next Rhomb-line, that you imagine in your Judgment lieth nearest a Parallel from Place to Place, and upon that Rhomb-line run your Compasses along, till the other Point (being at Right-Angles with it) doth reach the other Place, and that Rhomb-line is the true Point of bearing the one from the other.

4. To keep a Reckoning upon the Chart of a whole Voyage.

Eirst, It is to be understood, that you are to keep a Reckoning of every

every day's Work either by the Tables, or your Sinical Quadrant, (as you are before taught) or any other way necessary for such a purpose; and also to cast up all your Traverses for one or more days: And then after you have so done, and brought it to the nearest Truth you can, either by Observation or otherwise, then you are to set off your Work upon your Chart, so that the Place where your Ship is, may appear to your Eye for the Satisfaction of your Mind, and for the Information of your Judgment.

As suppose that you sail from the Lizard South-westwards; then from that very time you begin to keep your Reckoning of your several Courses and Distances, until you have some convenient time to cast up all your Work, to find the Difference of Latitude, and your Departure from the Meridian of the Lizard. The Disterence of Latitude we will suppose to be 3°, and the Departure to be 50 Leagues, which 3° you must subtract from the Latitude of the Lizard, which we suppose to be 49° 56! North; so that the Latitude that the Ship

is now in, is 46° 56', and 50 Leagues to the Westward.

Therefore to set the place of your Ship upon your Chart, you must use two pair of Plat-Compasses; with one pair take the Extent between the Laritude of 49° 56' and 46° 56', and set one Point of your Compasses in the Lizard, and extend the other Point towards the second place, but so that your Compasses may stand parallel to a North and South Line, which may be easily found with the other pair of Compasses, by trying whether the Legs be equi-distant from the next North and South Line: This done keep one foot of your Compasses in that Point, and with the other pair take the Departure to Leagues, from the Scale of Leagues; then interchange your Compasses, placing these last pair in the Point where the other pair stood; set this Departure to Leagues to the Westward, and so that your Compasses may stand parallel to an East and West Line, which you may try as is said before. The second Point thus found upon the Chart, is the place of the Ship (according to your Reckoning) which was required.

Sect. V. The Use of the true Chart, commonly called Mercator's Chart.

I Shall not here mention the Projection of this Chart, it being largly handled by the first Inventor, Mr. Edward Wright, in his Correction of Errors in Navigation, only here shew very briefly the ordinary and most necessary Uses of this Excellent Chart.

This Operation upon these Charts is in all respects like that which

has already been delivered for the same purpose, in the Use of the plain Sea-Chart, for if you set one Point of your Compasses in the place whose Latitude is required, and open them in the shortest Distance to the next East and West Line, observing where it intersects the graduated Meridian, and then place one Point in that Intersection, turning your Compasses upwards or downwards, according as the place lies, from the East and West Line, and the moveable Point shall shew upon the said Meridian the Latitude of the Place required,

Suppose the Latitude of Usbant were required by this Chart.

If you take the nearest Extent to an East or West Line, and place that Distance from the Intersection on the graduated Meridian, as is before directed, you will find the Latitude of Ushant to be 48 deg. 30 min. Northerly.

2. To find the Longitude of a Place, and consequently the Difference of Longitude in Degrees, between any two Places situate upon the Chart.

To find the Longitude of any Place upon the Chart, fer one Point of your Compasses in the said Place, and take the nearest Distance to the next North or South Line, and observe where this Line intersects the Equinoctial; and keeping the same Extent in your Compasses place one Point in the Intersection, and turning the Compasses the same way that the Place, whose Longitude is sought, lies from the North and South Line, the moveable Point resting in the Equinoctial, will shew the Longitude required.

Suppose the Longitude of Barbadoes were required.

If you place the Point of your Compasses in the Island of Barbadoes in this Chart, and take the shortest extent to the next North and South Line, placing the same at the Intersection in the Equinoctial, as is directed, you will find the Longitude of Barbadoes to be in these Charts 60° 30' from London. But the Longitude of Places being various, according to the Place from whence it begun, some reckoning it from London, some from Tenerist, &c. the chief Business will be to find the difference of Longitude between any two Places: which is thus to be performed.

When you have found the Longitude of the two Places, if they have the same Name, their difference, but if of contrary Names, their Sum is

the Difference of Longitude between the two Places.

Suppose the two Places were the Lizard, in the Longitude 5° 23' W. and Barbadoes in the Longitude 58° 32' W. subtracting 5° 23' from 58° 32', the Remainder 53° 9', is the Diff. Long.

Again

Again, Suppose the two Places were the Lizard, as before, and St. Thomas's like in the Longitude 8° 20' E. Add 5° 23' to 8° 20' the Sum will be 13° 43' the Difference of Longitude between the two given Places.

3. To know how one Place bears from another.

For the performance of this Problem, lay the Edge of a Ruler from one Place to another, and with a pair of Compasses try which of the Rhomb-lines the edge of the Ruler is the nearest Parallel; which being found, that sheweth the Point of the Compass the two places bear one from another.

Suppose the bearing of Barbadoes from the Lizard were required.

Therefore lay the edge of the Ruler upon both Places, and you will find, that South West a Point Westerly, is the nearest Parallel thereto, which is the bearing of Barbadoes from the Lizard, and the opposite Point North East & East, the bearing of the Lizard from Barbadoes.

4. To find the Diftance of two Places upon Mercator's Chart.

If both Places be in one and the same Latitude, take with your Compasses the length of a degree of the Meridian at that Latitude, (taking half the degree above, and half beneath the Latitude) for so oft as you shall find that length between the two Places, so many times so leagues are there betwixt them; but if the Distance be great, for Expedition, you may take sive times the length of that degree, and counting it for too Leagues, proceed as before.

Suppose the Distance were required between the Point of Usbant and

Cape-bona-vifta in New-found-land.

The Distance taken as before about the Latitude of 49°, you will

find it to be 560 leagues.

But if two places have not the same Latitude, the Equinoctial not coming between them, subtract the lesser Latitude out of the greater; but if the Equinoctial cometh between them, add both Latitudes together so have you the difference of Latitude between both Places.

Now if both Places have the fame Longitude, fo many degrees as there are in the difference of Latitude, fo many times 20 leagues is the

Distance.

But if the Places differ both in Latitude and Longitude, then look how many degrees the Difference of Latitude contains, so many degrees of the Equinoctial take between your Compasses, then lay a Ruler to both Places whose distance you seek, and observe where the Ruler crosses the Equinoctial, or some other East or West Line, (or Paraller Confes the Equinoctial)

lel of Latitude) and leading one foot in the Equinoctial or other Parallel, move forwards the other also Parallel wise, keeping always that distance, till it cross the Rhomb of those two Places in such fort, that one foot resting by the Edg of the Ruler, the other carried about, may but only touch the Equinoctial, or other Parallel cut by the edg of the Ruler; then take with pour Compasses the Segment, or part of that Rhomb between that place and the crossing of the Equinoctial or Parallel, which measure in the Equinoctial, and see how many degrees are contained betwixt them, so many times 20 leagues is the distance of those two Places.

Or, if that Segment of the said Rhomb be greater than can well be taken with the Compasses, take the length of 5 degrees of the Equinoctial between your Compasses and look how oft you can find that length in the Segment of the Rhomb aforesaid, for so many hundred

leagues is the distance of those two Places.

If the Distance from the Lizard to Barbadoes were required, the disterence of Latitude between those Places is 36° 46'; therefore take 36° 46' from the Equinoctial, and laying a Ruler over both places, until it will cross some Parallel of Latitude; then keeping this distance of degrees in your Compasses, apply one Point to the edg of the Ruler, so that the other Point may but just touch the Parallel crossed by the Ruler; the Segment of the Rhomb between the Point where the Compasses stay, and the Intersection by the Ruler and Parallel of Latitude, measured by the degrees of the Equinoctial, gives the distance about 1140 leagues, which was required.

There is nothing else that will be of any dissiculty in the common Use of this Chart, if these brief Hints be understood.

Sect. VI. The Description and Use of the Globes.

F Globes their are two forts, one is Terrestrial, and the other Calestial.

The Terrestrial hath on the Superficies of the Body pourtrayed and described the whole Form and Fashion of the Earth and Sea, with the

Circles of the Sphere, as Colures, Equinoctial, Tropicks, &c.

The Calestial Globe hath on its Surface the Constellations of all the known Stars in the Heavens, placed in their Latitudes and Longitudes, Right Ascensions, and Declinations, drawn into several Images and Fitures, according to the Fictions of the Antients, with the Circles of the Salest, as is in the Terrestrial Globe.

Geogra-

Geographical Definitions necessary to be understood.

Defin. I. The Globe of the Earth is a Spherical Body, composed of Earth and Water, and is divided into Continents, Islands and Seas.

II. A Continent is a great quantity of Land, not divided nor seperated by the Sea, wherein are many Kingdoms and Principalities; as Europe, Asia and Africa are one Continent, and America is another.

III. An Island is such a part of the Earth that is environed round with Water; as the Island of England and Scotland, and also Ireland,

the Isle of Wight; Barbadoes, &c.

IV. A Peninsula is such a part of Land as is almost encompassed about with Water, and is only joined with the Land by an Isthmus; such is that great part of Land in America, called Peruviana, and Morea in the Levant.

V. An Isthmus is a narrow Neck of Land, which joineth the Penin-

fula to the Continent.

VI. A Promontory is some high Mountain, or great Cape of Land, that shooteth it self into the Sea; as Cape Bon Esperance, or Cape de Verde in Africa.

VII. The Ocean is a general Collection of the Waters, which envi-

roneth the Earth on every fide.

VIII. The Sea is part of the Ocean, to which we cannot come but

through some Strait, as the Mediterranean and Baltick Sea.

IX. A Strait is a part of the Ocean, restrained within narrow Bounds, and opening away to the Sea; as the Straights of Gibralter that leadeth into the Mediterranean, and the Sound that leadeth into the Baltick Sea.

X. A Creek is a small narrow part of the Sea, or Rivers that go up

but little way in the Land.

XI. A Bay is a great Inlet of the Land, as the Bay of Bifeay, and the Bay of Mexico.

XII. A Gulph is a great Inlet of the Land, deeper than a Bay; fuch

is the Gulph of Venice, and the Gulph of Florida.

XIII. A Climate is a certain space of Earth and Sea, that is included within the space of two Parallels; and of them there have been antiently accounted seven.

1. Dia Meroes. 2. Dia Syenes. 3. Die Alexandria. 4. Dia Rhodes. 5. Dia Rhomes. 6. Dia Boristhenes. 7. Dia Ripheos. But now there are 24 on each side of the Equator, ending where the longest Day is 4. Hours.

XIV. A Zone is a certain space of Earth contained between certain

Circles of the Sphere, and are thus divided:

The Earth is divided into five Zones, viz. one Torrid or Burning Zone, two Temperate, and two Frozen Zones. The

The Torrid Zone is that which is on each fide the Equinoctial, bounded by the Tropicks of Cancer and Capricorn.

The two Temperate Zones are contained between each Tropick, and

the Polar Circles.

The two Friged or Frozen Zones, are contained within each Polar Circle and their respective Poles.

The Globe of the Earth is divided into four Parts, Viz.

EUROPE. 75 AFRICA AMERICA. ASI.A.

EUROPE is bounded from Asia by the Mediterranean Seas, on the East with the River Tanais, and on the West with the Western Ocean; and containeth these Provinces.

Germany, Italy, France.

Spain, Denmark. Norway,

Sweedland. Muscouy, Poland.

Hungary. Sclaveny. Greece.

The Principal Islands are,

Great Britain, breland.

Candie. Sicily.

Sardinia, Corfica.

Cyprus.

ASIA is bounded on the North with the Northern Ocean, and on the South with the Red-Sea; on the East with the East Indian Ocean, and on the West with the Flood Tanais.

The Principal Regions are,

Anatolia. Syria. Paleftine.

Armenia. Arabia. Georgia,

Affyria. Me sopotamia. Chaldea:

Perfia. Mogul.

China. India, and the Tartaria, Islands thereof

AFRICA is bounded on the East with the Red-Sea, on the West with the Atlantick Ocean, on the South with the Southern Ocean, and on the North with the Mediterranean Sea.

The Provinces.

Egypt, Aby Shnes, Barbary, Monomotapa, Athiopia, Nubia.

The Principal Islands are.

Madagascar, or St. Laurence, The Canary Islands,

St. Thomas. The Madera Islands.

Cape de Verde Ifflands.

AMERICA is bounded on the East with the Atlantick Ocean, on the West with the Pacifick South Sea, on the North without Bounds, and on the South with the Mogellanick-Sea.

New France, New Jersey, Corolina	
New France, New Jerfey, Carolina, New England, Maryland, Terra Plorid	
Pensylvania, Virginia, Mexico, or J	

	Constitution of the second	THE CHE	a mangs a	ie, was	ACT TO SHAPE		
Ifeland.	Hilbaniol			500	2 数据		
Greenland	Ci	建筑建筑	auten,	医 地区 条			
C.F.C	Cuva.	Bar	badoes, and	the re	A of	the Pr	100
Ifeland, Greenland, California,	Porto Rico	ากล	nde				

D	The Provinces of Chili,	South America	are	
Brazil, Terra Firma	Chili, Am	azones.	Magallani	11.3
Lerra Firma,	Peru, Par	ae ua	7,7-8-10/81	

One Island, Terra del Fuego.

The Names of the Seas in feveral Parts of the World

Mar del Nort, Narrom Sea, Medisorranean Sea, Mare Major, Pacificum, Mare Caspium, East-Indian Sea, Persian Sea, Res

The Names and Number of the Stars of each Confedition on the Celebral G

Northern Confellations are 21, via 1 Urfa Major, 2 Urfa Minor, 3 Draco. 4 Cepbeus, 1110 (919) 11 16 Aquila S Bootes. 17 Antinous 6 Corona Borealis Delphinus. 7 Engonases, or Hercules, 29 19 Equiculus 8 Lyra. 10 20 Pegefus, 9 Olor, or Cygnus, 21 Andromeda, 22 Triangulum 10 Coffiopeia, 13 11 Perfeus, 26 23 Cona Berenice.

12 Auriga Lid to the gira bas 344 Zodiack Conffellations, 12, viz. I Aries, 7 Libra 2 Taurus, 3 Gemini, Anna della 9 Sagitterius, nas elle edla 4 Cancer, and an edella 9 10 Copricornus, and the militia Leo. 27 11 Aquarius,

26 12 Fiftes

Southern Constellations, 27.

	2 se Piscis Auftrine, 11
	1 16 Grus, 13
的复数形式 化过滤器 医过滤器 网络拉拉斯斯特拉拉斯特特拉拉斯特斯特拉拉斯特拉斯特拉斯特拉斯特拉斯特拉斯特拉斯特拉斯	17 Phanix, 15 2 18 Indus, 12
5 Canis Major,	8 19 Pavo, 20
建筑建设设施,建筑设计划,建筑设计划,以上,一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	1 20 Apus avis Indica, 11.
	5 22 Camelion, 10
9 Crater,	7 23 Triangulum Auster, 5
	7 24 Pifeis volans, 7
	9 26 Toucan,
Is Ara,	7 27 Hydrus. 21
14 Corona Auft.	01

The Globes are composed of those Parts:

First, The Body, or Globe it felf.
Secondly, The Brazen-Meridian.
Thirdly, The Quadrant of Altitude.
Fourthly, The Hour-Circle and Index.

Fifthly, The Wooden-France in which it is put, called the Horizon.

The Globe doth represent the natural Situation and Position of the Earth and Heavens, and performs Problems of the Sphere, either in Astronomy or Geograppy.

The Brazen-Meridian is divided into 4 Parts or Quadrants, each being divided into 90°; within this Meridian the Body of the Globe turneth upon the Axis, being two ftrong Wires.

2. The Hour-Circle is a flat Ring of Brass, fastned upon the Northpart of the Meridian, and is divided into the 24 Hours of a natural Day; and each of these Hours is subdivided into Halves and Quarters.

3. The Quadrant of Altitude is a long and thin Slip of Brais divided into 90°, and is to move up and down upon the Surface of the Globe to any Position required; and when placed in the Zenith, the Edg thereof represented an Azimuth, and the Divisions show the Almicanters, or Circles of Altitude.

Meridian, and confequently the whole Globe doth move, being divided into a Kalendar, thewing the Day of the Month, the Place of the Sun, the Rhomhs, &c.

PROB. 1. How to fet the Globe to the Latitude of a Place.

Suppose you were to set the Globe to the Latitude of 52° North; the Globe being in the Frame, move the Meridian either higher or lower, until 52 doth cut the very Edg of the Horizon on the North side thereof (the divided Side of the Brazen-Meridian being towards you) then the Meridian of the Globe being turned North and South, by the help of a Magnetical Needle, it doth then represent the natural Situation of the Heaven or Earth upon the Celestial or Terrestrial Globe.

The Use of the Terestrial Globe.

PROB. II. To find the Latitude of any Place upon the Globe.

First find the place required upon the Globe, then turn the Globe about, until the Place whose Latitude is required be just under the Brazen-Meridian, then note what Degree stands against it on the Meridian; that is the Latitude of the Place which was required.

Example. Let it be required to find the Latitude of Rome: Turn the Body of the Globe about till Rome be just under the Brass-Meridian, and you will see 42 to be right against it, which is the Latitude of Rome.

PROB. III. To find the Longitude of any Place upon the Globe.

Turn the Body of the Globe about, till the Place whose Longitude you require, comes under the Meridian: then observe what Degree of the Equinoctial is cut by the Brass Meridian, and the Number of those Degrees is the Longitude of a place you seek for.

Example, Let it be required to find the Longitude of Rome, as before; therefore bring Rome under the Meridian, which being done, the Meridi-

an will cut the Equinoctial in 360, the Longitude required.

PROB. IV. To find the diftance of any two Places on the Globe.

To perform this, lay the beginning of the Deg. on the Quadr. of Attitude upon one of the Places required, and note how many Deg there are contained between them; which is the Diffance between the faid Places.

Example. Let it be required to find the Distance between London and Rome; therefore lay the Quadrant of Altitude from one Place to another, and you will find 13° to be intercepted between the aforesaid Places, which is the Distance between London and Rome.

PROB. V. To find the Positions of Places one from another.

First set the Globe to the Lat. of one of the Places, and bring the same Place under the Meridian, and extend the Quadr. of Altitude, being fixed over the first Place to the other Place, and the end of the Quadr. shall point out on the Horizon the Position that one Place hath from the other.

Cca

Example.

The first the Chellian Globe.

Ex. Let it be required to know the Position of Rome, from London; therefore bring London under the Meridian, and there sit the Quadr. of Altitude, and lay the edge thereof upon Rome, and the end of the Quadr. of Altitude will point to 53°, which is the Position of Rome from London.

The Use of the Celestial Globe.

PROB. VI. The Day of the Month being given, to find what Sign and Degree the Sun is in.

First find the day of the Month in the Kalendar, on the Horizon, and right against it you shall find the Sine and Degree in which the Sun is.

Example. Let it be required to find the Sun's Place on the fifth of May. You must find the of fifth of May in the Kalendar, and right against it you will find 25 degrees in Taurus, which is the Sun's Place that Day.

PROB. VII. How to place the Index of the Hour-Circle for any Day in the Year.

The Place of the Sun found (as in the last Proposition) you must find that degree on the Ecliptick line of the Globe, and bring that degree to the Brazen-Meridian; then staying the Globe there, turn about the Index of the Hour Circle till it points just upon the upper Line of XII in the Hour-Circle; which being done, the Hour-Circle is rectified for that Day.

PROB. VIII. To find the Time of the Sun's Rising and Setting.

The Hour-Circle being rectified, and the Globe set to the Latitude, then turn the Globe about till the degree in which the Sun is, cut the East-side of the Horizon; and then casting your Eye upon the Hour-Circle, the Index will shew you the Time of the Sun's Risling: And the Globe being turned about till the degree of the Sun cut the West-side of the Horizon, the Index will shew you the Time of the Sun's Setting.

Ex. Let it be required to find the Sun's Rifing and Setting the fifth Day of May, in the Lat. of London, the Sun being then in 25° of Taurus.

First, find the 25th deg. of Taurus in the Ecliptick-line, which being turned to the East part of the Horizon, you will find the Index point to a quarter after four of the Clock; the same Point of the Ecliptick being turned to the West-part of the Horizon, you will find the Hour Index point to 3 quarters past 7, the Time of Sun setting.

Having the time of the Sun's Rising and Setting, you may find the Length of the Day and Night; for the Time of the Sun's Rising being doubled, gives the Length of the Night, and the Time of Sun setting

doubled the Length of the Day.

Example. The fifth of May, the Sun rifeth at 4 of the Clock and a quarter

quatter past, which being doubled, is 8 Hours and a half, the length of the Night; and the Sun setting, which is at 7 a Clock and three quarters, which being doubled, is 15 hours, the Length of the Day.

PROB. IX. To find the Sun's Amplitude.

The Amplitude of the Sun is an Arch intercepted between the East or West-points, and that part of the Horizon where the Sun riseth or setteth.

The finding of the Amplitude differeth little from the last Proposition: For having brought the Degree of the Sun's Place to the Horizon, you count how many Degrees of the Horizon are intercepted between the East or West-point, and that Part of the Horizon where the Sun either rifeth or setteth.

Example. The fifth of May, I defire to know the Sun's Amplitude in the Latitude of London; therefore bring the Place of the Sun that Day to the Horizon, and you find 310 \frac{1}{2} intercepted between the Point of the Horizon, and the East-point, which is the Sun's Amplitude Northerly.

PROB. X. How to find the Sun's Declination any Day of the Year.

The Declination of the Sun is an Arch of the Meridian, intercepted between the Sun's Place and the Equinoctial; to find which you must bring the Degree in which the Sun is to the Brazen-Meridian, and there stay it, and count how many Degrees of the Meridian are contained between the Equinoctial and the Sun's Place, and that is the Declination.

Example. I would know what Declination the Sun bath the fifth of May, the Sun being 25° in Taurus, which being brought to the Meridian, you will find 90° intercepted between that Point and the Equinocti-

al on the Brazen-Meridian, which is the Declination required.

PROB. XI. To find the Meridian Altitude of the Sun any Day of the Year.

The Meridian Altitude of the Sun is an Arch of the Meridian, intercepted between the Horizon, and the Degree in which the Sun is. To perform which, turn the Globe about till the Degree of the Sun be just under the Brass Meridian: Then staying the Globe there, count how many Degrees are contained between the Place of the Sun under the Meridian and the Horizon; and that is the Meridian Altitude.

Example. On the fifth of May, it is required to find the Meridian Altitude of the Sun that Day in the Latitude of London; the Sun's Place in the Ecliptick is 25 Deg. in Taurus; therefore bring that Degree under the Brass Meridian, and you will find 57° and a half to be intercepted ugon the Brass Meridian, between the Place of the Sun and the Hori-

zon; that is the Meridian Altitude of the Sun that Day.

PROB. XII. How to know what Altitude the Sun shall have any Hour of the Day, on any Day of the Year.

Having found the Sun's Place, and rectified the Globe to the Latitude, and the Index of the Hour Circle for the Day or policy, turn the Globe about

about till the Index of the Hour Circle be just upon the Time when you would know the Altitude, then staying the Body of the Globe here, bring the Quadrant of Altitude, being scrued on to the Zenith, and lay it over the Sun's Place: Then the Number of the Degrees contained betwixt the Horizon and the Sun's Place, counted on the Quadrant of Alti-

tude, is the Altitude of the Sun at that Hour,

Example. Let the Time given be the tenth Day of April, in the Latitude of London, at which time (by the fixth Proposition) I find that the Sun is in the beginning of Taurus, and I would know what Altitude the Sun will have at nine of the Clock in the Morning: The Index of the Hour-Circle being rectified for that Day, turn the Body of the Globe about till the Index of the Hour-Circle lies just upon 9 of the Clock: then staying the Globe there, lay the Quadrant of Altitude on the Sun's Place and the Number of Degrees between the Horizon and the Sun's Place (counted upon the Quadrant of Altitude) is the Height of the Sun, which here I find to be 36° at that time, or at three in the Afternoon; for the Sun hath the same Altitude (nearly) at 9, 8, 7, 6, &c. in the Morning, as it hath 3, 4, 5, 6, &c. in the Evening.

PROB. XIII. How to find the Hour of the Day by the Globe.

This Proposition cannot be performed conveniently by the Globe only, but the Altitude of the Sun must be first taken by some Instrument, and then this is but the Converse of the former Proposition which it performs thus: The Globe being set to the Latitude, and the Index of the Hour-Circle rectified, turn the Globe about till the Degree of the Sun's Place meet with the Altitude, taken by the Instrument, upon the Quadrant of Altitude, and then will the Index on the Hour-Circle shew you the Hour of the Day.

PROB. XIV. To find both the Right and Oblique Ascension, and Oblique Descension of the Sun.

The Globe being set to your Latitude, bring the Degree of the Sun to the Brazen-Meridian, there staying it; see what Degree of the Equinodial is cut by the said Brazen-Meridian, and that is the Right-Ascension of the Sun that Day. So the Sun being in the beginning of Taurus, his Right-Ascension will be found to be about 28°; and bringing the Sun's Place to the East-part of the Horizon, in the Latitude of London, the Horizon will cut the Equinodial in 13° \frac{1}{4}, which is the Oblique-Ascension, and bringing the Sun's Place to the West-part of the Horizon, the Horizon will cut the Equinodial in 43°, the Oblique Descension.

PROB. XV. To find the Meridian Altitude of a Star, or the Altitude of a Star at any time.

To find the Meridian Altitude, let the Globe be fet to your Latitude and

and then turn the Body of the Globe about, till the Star be under the Brazen-Meridian, and then the Number of Degrees of the Meridian intercepted between the Star, and the North or South-part of the Horizon according as the Star is fituated, is the Meridian Altitude thereof.

Now to find the Altitude at any other Hour, turn about the Globe till the Index of the Hour-Circle be at the Hour you would know the Alritude of the Star (the Index of the Hour-Circle being first rectified to the Sun's Place) and then apply the Quadrant of Altitude to the Star, and the Degrees of the Quadrant cut by the Star, are the Altitude, at that Time.

PROB. XVI. To know at any time of the Day or Night, what Stare be above the Horizon.

This is no other than to place the Globe in a true Polition at that Time : Which is eafily performed by turning the Globe (the Index first rectified to the Sun's Place) till the Hour-Index point to the Hour of the Day or Night; and staying the Globe there, you will see all the Stars that are above the Horizon at that time.

PROB. XVII. How to know the Rifing, Culminating, and Setting of any Fixed Star; also what part of the Horizon he rifeth and setteth in.

Having rectified the Index of the Hour-Circle, and placed the Globe according to the Latitude, then bring the Star, whose Rising, Culminating or fetting your defire, to the East fide of the Horizon; then will the Inder of the Hour-Circle shew you the Time of his Rising; then bring the fame Star under the Brazen-Meridian, and there staying the Globe, the Index will shew you at what Hour the said Star Culminates, and comes to the Meridian. Lastly, bring the same Star to the Western-part of the Horizon, and then the Index of the Hour Circle will shew you at what Hour the faid Star fetteth, and by the Horizon you may know the Amplitude, as of the Sun.

PROB. XVIII. To find the Hour of the Night by the Globe.

You must take the Altitude of some known Star by a Quadrant, or other Instrument, and then having rectified the Index of your Hour-Circle according to the Day of the Month, turn the Globe about till you make the Star agree with the Altitude upon the Quadr. of Altitude to the Eastward or Westward of the Meridian, according to the Star's Position then the Index of the Hour-Circle will point out to you the Hour of the Night.

Sect. VII. Shewing some secret Properties of the Loadstone.

HE Mature, and strange Properties of the Loadstone are such that the more they are known, the more they are justly to be admired, in

their lively expressing the infinite Power and Goodness of God, who hath created to precious a Jewel for the profitable use for Man; and for the enlarging and feeting forth of his own Glory, especially in that Ashstance it affords to Man, in the Discovery of the whole Universe, which is the Work of his Hands, and his mighty Wonders in the deep Waters; the Properties not only ferving for Maritime Affairs, but also in travelling by Land in vast and folitary Deferts; for moveable Sun Dials in all Places of the World; for the more ready and exact Chorography of any Courty, or true plotting of any ground, and for following of any Mineral Vein (void of Iron) under the Earth; and also for Coal Mines, with feveral other necessary Uses; retaining in it self, as it were, the Mirror of Philosophy, manifested by its Sympatherical Coition, and Antipathetical Repulsion, with many other occult Operations very admirable to behold; two especially that are treasured up in its dusky Entrails, one of Arrraction the other of Direction: It hath Substance, Virtue, and Operation, serving to many good Purposes; therefore this Stone of all others may be accounted the most precious, wherein the Majesty of Nature doth most appear; which admirable Treasure God hath vouchsafed to reveal nto the weak Knowledge of Man towards the end of the World, being to blain to the meanest Capacity, and that out of a base, contemptible Stone, as it feemeth to be, and yet filled with fuch excellent and wonderful Virtue, that all the Gems in the Word have not the like.

Of the Name of the Stone, and of the Colour, and from whence it comes, and how it was first found.

This Stone is called Magnes, used under that Promiscuous Appellation both by the Greeks and Latins; and, as Lucretius writeth, the News is derived from the Country Magnesia,

The Greeks do call it Magnes from the place, For that the Magnets Land it doth imbrace.

Plato saith some call it Lapis Heraclius, from the Name of Hetaclea, a City of Lidia, where it was first discovered, and upon the same account the Touchstone is called Lapis Lidie.

Theophrastus for the same reason calleth it Herculeum.

Nicander thinks the Stone so called, and so doth Plan from him, from one Magnes a Shepherd; for its reported that he found it by his Hobnail'd Shoes, and Shepherd's Crook that stuck to it, when he fed his Flocks in India.

Others call it Siderites, from oising which fignifies Iron. By us it is called a Loadstone, alluding to the two Stars in the Tail of the Coelestial Bear, which were antiently called Load-Stars, or Leading-Stars, and therefore this Stone bears that Appelation, which how performs the same Office.

This

This Magnet, or Loadstone, is found in divers Parts of the World and most commonly in Iron Mines, and by some supposed to be of the Iron Oar-

Of these there are divers forts, different each from other, as well in goodness, as in Colour, Weight and Force, but not in Property, (althomany have judged the Cause of the Variation of the Needle to be according to the Distance of the Mine from whence the Stone was taken, and the place where it is used, but there is no such thing) for all Stones whatfoever have one Direction.

The first and best fort of these Stones come out of East-India, from the Coast of China and Bengal, and are of the colour of Iron, or guine colour: These Stones are mally and weighty, and will draw or life up the just weight of themselves in Iron or Steel, and some five times ten times, and twenty times their own weight, and thefe are of the fort, and are commonly fold for their weight in Silver in the East India where they grow, because the best or finest are very fare to be found; for it is commonly an entire Stone, lying in the Earth by It fell, and no piece or part of any other.

There is also another fort, of a reddish colour found in Arabia, and Red-Sea, growing broad and flat, much like unto a Tile of Hearth: These are not so weighty as those of China, but are very action good, and the Virtue continueth long on the Compass or Needle that is

touched upon these Stones.

There are of these Stones likewise in the Levant, near a Town called Power Feraro, and are called there Calamita Preta, that is to fay, the Blas Magnet: because there is another fort that is white and light, like piece of dry Fullers Clay, and are called Calamita Blanca. These Stones are mingled with white Veins; they are of no great force, nor their Virtue of long continuance.

All there are of these Stones in High Germany, that are full of Holes like a Honey-Comb, and lighter than the other, but better than they; these are of an Iron colour.

Another fort there are in Norway, in the Iron Mines, as in Long Sound, and other Places; their colour is black, mixed with gray; these are also of an indifferent force.

There are also some in the Mines of Caraca and Cantabria in Spain; and some there are found in the West of England.

There are some also found in Bohemia, and several other Places,

Also these Stones are different one from another, as well in Force, as in Colour and Weight, bet all of one Operation in the Needle, Thewing all one Point of Directles: Which is a most wonderful and admirable Providence of God to cause it so to be; for infinite would the Diffractions be, if it were otherwise in the practical Use of the Compass: For

true it is, that God is mighty and marvellous in all his Works, and truely his Power is greatly shewn in this wonderful Miracle of Nature,

Of the Attractive Virtue of the Loadstone.

That this Stone hath an attractive Operation, is apparently manifest; for if you apply a piece of Iron unto either of the Poles, it will there hold it, and at a Distance will also draw or attract a small piece of Iron, according to the Vigour or Imbecility of the Stone; but what strength soever it buth, it may be artificially improved to be greater, than can by it self be discovered: Which is to be performed by applying a smooth and bright piece of Iron to either Pole of the Stone, and it will immediately deliver its Virtue unto it. The Virtue being herein contracted in this piece of Iron, the Stone doth manifest it self to have ten times more strength; for this Cause therefore are Loadstones capped with Iron, for the artificial Augmentation of their Strength.

And this Virtue is freely communicated from its felf to any thing else that is capable of its Reception; so that a piece of Steel, having received Strength from the Stone, that will also attract another peice of Steel in

proportion to that Virtue it hath received.

This Experiment I have often tried upon my Loadstone; for by touching of a Knife upon it, it will take up a Key of two Ounces weight; and that within the Sphere of the Stone it shall deliver the Virtue into a piece of Iron, and not touch the Stone at all; and likewise over the Stone, it shall cause one piece of Iron to hang to another. So wonderful is the attractive Quality of this Stone, manifested in these and the like Experiments.

Of the Sympathetical and Antipathetical Property of the Loadstone.

When a Needle is touched upon a Loadstone, the North and South ends of this Needle will apply themselves respectively to those Poles from whence they received their Magnetical Life, to wit, the North end of the Needle, to the South-end of the Stone, which denotes their mutual Sympathy; but putting the North-end of the Stone, to the South end of the Needle, when it is upon a Pin, the South end of the Needle will immediately fly away; and if you put the South-end of the Stone to the North-end of the Needle, it will also discover its Antipathetical Nature, and fly away from it.

But a contrary Operation there is yet in the two Needles to that of the Loadstone; for if one of the Needles be hung upon a Pin, that you apply the North-end of the Needle to the North-end of that upon the Pin, it shall immediately sly away; which denote that contrary Operation in the Needle to that of the Loadstone, and the South end of one will immediate

ately come to the North-end of the other.

The

The same Property of Sympathetical Coltion, and Antipathetical Rupulfion, is also discovered by two Loadstones, stoating in two little Boats in a great Bason of Water, the two Poles of either Stone being disposed parallel to the Plain of the Horizon; and if you put both the South-Poles together, they shall avoid the Contract of one another by a natural Antipathy; but if the North-Pole of the one be direct to the South Pole of the other, they will immediately manifest their natural Sympathy one to

another, and will cleave together by a strong Attraction.

This is also apparently evident between the great Magnet the Earth, and a Loadstone; for if you put a Loadstone into a small String, and let it bang in the Air, or else to float in the Water in a Wooden Dish, and putting the North end of the small Magnet towards the North end of the great Magnet the Earth, it shall immediately change its Position, and turn its North-Pole towards the South Pole of the said great Magnet. The same Experiment is also found with Magnetical Needles, or Mariners Compasses being placed near together, the North point of one will draw the South-point of the other, and so will stand North or South ad Infinitum.

If a Loadstone be confusedly broken by Violence into many Pieces, each of the Pieces shall be an entire Loadstone, having both its Poles distinctly of it self, with all the other Properties that were in the Stone before it was

broken.

But if a Loadstone be divided in the midst between the two Poles, in the Equinoctial, then it is absolutely two entire Loadstones; and those Parts which were the Equinoctials before are now become two Poles, and

the two Poles that were Poles before, do continue the same.

But if a Stone be cut Meridionally quite thro' the two Poles, so that one Axis is now converted into two, and each of them remove into each Stone, so that it is also become two entire Loadstones, the Axis of either of them will retire into the Gravity of either Piece; and if you join these two Pieces' together again, the two Axis will again become one, which is most admirable to behold.

But if you cut off a piece of the Stone at the very Pole, in a parallel Scetion the Virtue of that piece will immediately retire from it unto the main Stone, and will scarcely have any Virtue at all therein, but applying this small Piece that was cut off, to the same Place again, the Store will forthwith impart the same Virtue as was before, into this Piece so cut off, so long as it doth abide in that place: But when it is removed, it doth again recal its Virtue from the said Piece. This I have expetienced in a Stone of a very considerable Piece.

And in the same manner, if you apply a weak Stone to the Poles of a strong one, the strong Stone will impart of its Virtue to the weak Stone, making it to be as strong as it self, so long as it is its Neighbour; but

Dd 2

wh:n

when this weak Magnet deferts this neighbourly Propinquity, the strong Magnet will draw its Virtue to it self again, and will trust it no further than the Power of its recal.

To find the Poles of a Stone.

Here are feveral Ways for the Performance of this Experiment. First, you may have a thin piece of Steel about an Inch in length, and half of an Inch board; this piece of thin Steel being bent circular and laid on the Stone, will immediately lie parallel to the Axis of the Stone, and direct which way the Poles do lie. Which being discovered near where they lie, you may find them more exactly by a small piece of fewing Needle; which being laid on the Stone, if it be near either of the Poles, will elevate one end thereof; then move it farther and farther; till it doth erect it felf perpendicular, and that very Point will be the Pole of the Stone.

Now to know which Pole it is, you may apply a small Needle of a Dial to it, and if the Pole draw the North-end of the Needle, then is that

the North-Pole of the Stone; and the contrary.

Or otherwise you may find the Pole by a sewing Needle and Thread, by hanging it over the Stone where you suppose the Pole to be, and keep it a little short from the Stone, and the end of the Needle will directly point to the Pole of the Stone.

A delightful Experiment, representing the Engaging of two Armies.

OR the performance hereof, you must have a Brass or Pewter Plate, and upon this Plate put several little heaps of the Filings of Iron, with some short Bits of sewing Needles, and put them in order of a Battle, one Main Body against another, also with their Right and Left Wings, and their Forlorn hopes; this being done bring the Loadstone under the Plate with one of the Poles upward, and put it first toward one of the Right Wings of the Army, and they will immediately receive an Alarm, and as it were stand to their Arms; then move the Stone toward the other Wing of the Enemy, and they also will receive the like Alarm: and then by moving the Stone to and fro under the Plate, you will put both Parties into a Motion, in a charging Posture, and one to charge the other in a desperate Engagement, and one to come within the other; and fo you may at last engage the Main Bodies of the Army, and there you may fee that fometimes they are Conquerours, and fometimes conquered, which is caused by the Motion of the Stone with your Hand under the Plate; and the short Bits of the Needles may represent their Generals and Commanders, which will be very full of Action, where you may fee fometimes that there will be Twenty or more of the Common Souldiers to fall foul of the faid Commanders; and if between these Armies you put small Breast-works and Trenches made with Sand and Filings put in the Trenches, you will then then have represented the sudden rising of them one against another, as if they lay in Ambush, waiting for an Opportunity against their Enemies.

To make a Sewing-Needle swim upon the Surface of the Water, and to play up and down like a Fish, and to find out the Magnetical Meridian.

Ake a small Sewing-Needle, and touch the two Ends thereof upon the two Poles of the Stone: and having a Glass of Water before you, take the Needle very lightly between your Finger and Thumb, and lay it lightly on the Surface of the Water, so that it break not through, and there it will lie; then take a Knife that hath been touched with the Loudstone, and bring it to and fro upon, the Edge of the Glass, and the Needle will follow it up and down, and will play up and down on the Superficies of the Water like a Fish; and then take away the Knife, and the Needle will immediately posite it self to the Meridian, pointing due North and South.

Such an inferior Instrument as this may stand Men in great stead in time of great Straits and Exigencies, if they should be at Sea, and their Compasses be taken from them; for if you put a Needle, being touch'd thro' a small piece of Cork, it will then perform this Effect exceeding well in all Storms and Tempelts what soever, being born up by the Cork on the top of the Water, and the Position thereof will be continually in the Magnetical Meridian.

To Infuse Magnetical Virtue into a Needle, without the belp of a Loadstone.

Non being a Mineral of the Earth, and having a Sympathetical Quality with the Loadstone, acquiring this Verticity from the Magnetism of the Earth, being dispensed according to the various Positions thereof; for all Iron, whose Position is parallel to the Aris of the World, or if it be perpendicular to the Horizon, the Upper-part thereof shall have North, and the Lower-part South Virtue; as Bars in Windows, Casements. Tongs and Fire-Forks, and all such things, &c. And according to the Length of the Time, of the Position of any such piece of Iron, the stronger Virtue it doth contract; So that I once made an Experiment upon a smooth piece of Iron, which had for several Years been in a perpendicular Posture, and I filed the upper-end thereof bright, and touched a small new Needle thereon, the South-end I touched uppon the North or uper part of the Iron, and the North-end upon the South or lower end; and I mind the Needle to play indifferently well, and to conform it self to the Magnetical Meridian.

The Reason of this is from the Nature of the Iron, it being a Metal deducted out of the Loadstone, or out of a Mine of that kind; the best Iron Mine and Loadstone is the same thing; for it being placed artificially in the Air, or upon the Water, moveth North and South, attracteth other Iron unto it, and performeth the same Conclusions as the Magnet it self.

200 A Cable of the abou	on's Age for the Bent 1711.
D. A. M.	M.S. D. F.CV
New moon. 07 10 11	(New moon 04 07 07
) First quart. 15 07 13	First quart, 11 10 57
	Full moon. 18 00 52
"时间"。温度自然 [1]	(Last quart. 25 22 33
New moon. 06 01 42	New moon. 02 18 26
First quart. 14 04 18	New moon. 02 18 26 16 02 16 02
Full moon. 21 12 06 Laft quart. 28 04 21	Full moon. 16 16 58
28 04 21	CLast quart. 24 16 18
New moon. 07 18 06	
First quart. 16 00 44	New moon. 01 05 10 First quart. 07 22 33
S- Jrul Moon. 22 22 38	Full moon. 15 06 46
GLaft quart. 29 14 02	E (Laft quart. 23 11 04
(New moon, 06 11 06	《大学》,"一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个
First quart, 14 12 21	New moon. 30 14 21
F Full moon 21 05 34	First quart. 07 06 35
Last quart. 28 00 43	Last quart. 23 03 21
New moon. of og o8	New moon. 30 00 44
First quart, 12 22 20	Sherry and Santa
Full moon, 20 12 56	Full moon. 12 18 04
(Last quart. 27 14 08	Full moon. 13 18 12 Last quart. 21 18 02
(New moon, 04 17 55	3 (New moon, 28 10 54
12 Juli quart 112 06	
15) Full moon. 18 20 40	First quart. 05 08 14
Laft quart. 27 05 07	Full moon. 13 13 31
	New moon. 27 21 44

The first will be of the Sun January the 7th, about our tena Clock at Night, in the latter part of Caprically, but to us Invisible. The Second will be of the Moon on January, the 23d day about Noon; it falls in Leo 14 degrees, but will be only visible in our Antipodes where it will appear a very great Eclipse. The Third will be a small defect of the Sun on February the 6th day, near two a Clock p.M. in the latter part of Aquarius; this will be Invisible to us by reason of the Moon's great North Latitude: So that not above one whole Digit of 12 will be Darkened. The fourth will be a visible Eclipse of the Sun, on July the 4th, about 7 hours P. M. in Capetr 22 degrees, and more than 9 Digits of the Sun's Body will be obscured: the duration near 2 hours. The fifth will be a Lunar Defect, July 18th, about our like a Clock at Night, in fix degrees of Aquarius; but to us in England Invisible.

	The state of the s		1
M.	D. H. M.	- Mr	DHIM
CFirst quart.	04 03 19	- (Full moon.	06 20 30
Full moon.	12 07 50	Lall quart.	13 21 50
SLaft quart.	19 15 45	New moon	22 01 21
New moon	26 10 10	(First quart.	29 13 18
m First quart.	03 00 06	CFull moon	05 04 23
Full moon.	10 23 46		12 13 25
Last quart.	18 00 05	New moun.	20 15 02
? (New moon.	24 23 14	First quart.	27 19 47
		CT 11	
First quart.	03 21 15	Full moon	03 14 27
Full moon.	11 13 16	Last quart.	11 07 31
Laft quart.	18 07 14	New moon.	19 03 50
· CNew moon.	25 13 10	-Critiquat.	26 01 04
First quart.	02 15 51	CFull moon.	93 08 08
Full moon.	09 22 17	Last quart.	11 02 54
Laft quart.	16 14 40	New moon	18 15 48
New moon.	24 04 06	(First quart.	25 09 03
e First quart.	02 07 50	≥ Full moon	01 15 42
Full moon.	09 06 22	å)Last quart.	09 23 12
Last quart.	15 22 13	New moon.	17 03 02
New moon.	23 19 24	3 CFirst quart.	23 18 41
CFirst quart	31 22 03		
	学 经累土	Full moon.	01 12 58
Full Moon.	07 13 14	Last quart.	09 17 22
Last quart.	14 08 12	New moon.	16 13 36
New moon.	22 10 40	First quart.	23 08 01
(First quart.	30'06 01	Full moon.	31'07 55

The Year 1712 bath 4 Eclipfes, 2 of the Sun, and 2 of the Moon

The first will be a visible Eclipse of the moon, about our 8 a Clock at Night in 3 Digits of Leo, when the Moon will be almost 4 Digits darkened: It's continuance will be 2 Hours and upwards. The second will be a Solar Deliquium, on June the 22d, near our 11 a Clock, snvisible to us: It's celebrated in 12 Degrees of Cancer, or the Celestial Crab. The third shall be a small Lunar Defect on July 1.7th, at half an Hour after 8 a Clock in the Morning, in the latter part of Taurus, but Invisible in our Hemesphere. The sourch will be an Eclipse of the Sun, on December the 16th, at 13 Hours 36 Minutes P.M. and therefore Invisible to us: But in it self will be a very great Eclipse, and seen by our Antipades.

	THE PARTY OF THE P	VEYS/ECO)	CHOOSE SE
M.E. D. R. M.	Ma). H.	M
70 70 70	American per person	3 06	Hall I
Left quart. 08 08 97	TOTAL CONSTRUCTION TO SERVICE STATE OF		
2 New moon, 15 00 10	\$50 PER AND BOOK OFFICE AND ADDRESS BY	11 20	
5 First quart. 21 02 09	First quart.	19 04	03
Full moon. 30 03 47	(Full moon.	25 02	12
- Laft quart. 06 20 01	Last quart.	01 16	1 1
	B BETTOUT AND	09 17	(A) (SERVICE US)
		17 14	35 S. 35 D.
5 First quart. 20 17 10	THE TOTAL CONTRACT OF THE PROPERTY OF THE PROP	CONTRACTOR (NO. 1)	CARD COMMENTS IN
Full moon. 28 20 39	Full moon.	34 0	EES EESEN S F
	Last quart.	31 0	5 08
Last quart. 08 04 09	A PROPERTY OF THE PARTY OF THE	43.	
New moon. 14 22 26	New moon.	08 0	9 40
E First quart. 22 10 33	First quart.	15 20	2 13
Full moon. 30 10 35	Full moon.	22 1	3 48
	B (Laft quart.	29 2	1108
Laft quart. 06 11 01		100	
New moon. 13 09 10	New moon.	08 0	1. 08
	First quart.	15 0	1000
15 P.		COLUMN SPS	ELECTRIC PRODUCTION AND ADDRESS OF
' (Full moon, 28 21 32	Full moon.		BEARS ESSENCED II
	Lift quart.	29 2	0 02
Last quart, of 16 03			
New moon 12 21 47	New moon.	06 0	8 29
First quarte 21 09 09	First quart.	13 1	13 05
Full moon. 25 06 29	Full moon.	20 1	5 22
	Laft quart.	28 1	17 15
r Last quart. 01 22 01			
New moon. 11 11 29	New moon.	06	04 12
THE ROOM IN THE AMERICAN STREET, AND ASSOCIATED AND ASSOCIATED AND ASSOCIATED	3)First quart.	100 100 120	
Firff quart. 19 15 29		1 Sept 1987	
Full moon, 26 13 10	Full moon.	A EUROPE AND AND	08 25
and the same of th	13 Last quart.	281	13110

In the Tear 1983, will be four Eclipses, 2 of the Sun, and 2 of the Moon.

The first will be an Invisible Lunar Descrit, on May the 28th Day at near half an Hour after 6 at Night. It will be a small licipse in 17 Degrees, 39 Minutes of Sagistarius. The second will be a Solar Deliquium, on June the 11th day about our half an Hour after 11 a Clock at Night. It is made in 1 Degree, 11 Minutes of Cancer, Invisible to us; visible to our Antipodes. The third will be a Lunar Eclipse on November the 21st day, at our 3 of the Clock in the Morning. This will be visible to us; and half the Moons Body will be obscured, in 9 Degrees, 49 Minutes of Gemini. The fourth will be a Solar Deliquium, on December the 6th day, at 22 Minutes after 4 a Clock P. M. but the Sun being then below the Western Horizon, it cannot be seen of us. It is Celebrated in 25 Degrees, 42 Minutes of Sagistarius.

M. }	D. 1	H.	М.	M.E. D. H. M.
New moon.	04	15	56	Firstquare 08 07 03
Firft quart.	11	08	11	Full Moon. 15 13 06
Full moon.	19	03	06	E Laft quart. 22 05 26
(Last quart.	27	06	24	New moon. 29 18 40
New moon.	03	02	25	First quart, 06 22 07
First quart.	09	20	04	Full moon. 13 20 52
Full moon.	17	22	02	2 Laft quart, 20 13 04
CLast quart.	25	21	50	New moon. 28 10 25
New moon.	04	11	44	First quart. 05 12 03
Firft quart.	11	11	07	Full moon. 12 05 24
Full moon.	19	15	31	2)Last quart. 19 00 37
(Last quart.	27	06	24	9 ENew moon. 27 03 35
New moon.	02	20	43	Fird quart. 04 23 03
Firft quart.	10	04	39	(a) Full moon. 11 14 28
2 Full moon.	15	06	34	E) Last quart. 18 16 04
Last quart.	25	13	04	(New moon, 26 20 54
(New moon.	02	06	11	First quart, 03 09 01
First quart.	09	20	07	S Pull moon. 10 00 56
Se Full moon.	17	18	56	2) Last quare 17 11 03
Last quart.	24	19	11	3 (New moon. 25 12 46
New moon	3 X	16	47	
	100	1	1	GCFirst quart. 02 17 02
CFirst quart.	08	14	27	3 Full moon, 09 13 20
Full moon.	16	04	52	Last quart. 17 09 03
Last quart.	22	23	08	3 (New moon, 25 04 12
New moon.	120	04	46	

In this year 1714, we shall meet with five Luminarian Ecliples, three of the Sun and two of the Moon.

The first will be a Solar Eclipse, on May the 2d, about 6 hours Asternoon in Tannus 22 Deg. 24 Min. invisible to us. The second will be a Lunar Defect on May the 18th, near 7 a Clock in the Morning, in Sagittarius 7 Deg. 12 Min. invisible to us. The third will be a Solar Deliquium, on July the 1st, about our 5 a Clock in the Morning, in Genius 20 Deg. 41 Min. invisible. The fourth will be an Eclipse of the Sun, on October the 29th, near our 9 a Clock in the Morning, in Virgo 14 Deg. 31 Min. but not visible to us in England. The fifth will be a Lunar Deliquium, on November the 10th, a little past 1 a Clock Asternoon, in Tannus 28 Deg. 30 Min. It will be a great Eclipse to such as Inhabit our Antipodes, viz. not only Total, but nearly Central.

The state of the s		ONE'S		
	4M.3	1D	VE	TO MA
First quare, O1 01 08	Company of the Company			
Full moon. 08 03 52	(Full moon,	150	01	OS DEEP Ac-
Laft quart. 16 0g 50	Last quart.	13	01	12
18 Aran duan John Sol	New moon.	18	23	47
New moon. 23 13 34	CFirst quart.	26	o nomensar	55 ESELECT
First quart. 30 14	用的		338	1,,
经验证 证据 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图	Full moon.	03	12	1.0
Full moon. 06 20 54	Laft quart.	10	N DESCRIPTION OF STREET	18
Laft quart. 15 01 55	New moon.	CONTRACT	CONTRACTOR	
New moon. 22 01 48	Find moon.	17		18
First quart. 28 20 03	CFirst quart.	25	14	37
CFull moon. 08 14 47	Full moon	01	2 I	42
Daft quart. 16 17 14	Laft quart.	08	13.	21
	New moon.	16	03	19
New moon. 23 10 40	First quart.	24	07	12
CFirst quart, 30 07 21				
是是"多"的"数"的"数"的"数"的"数"的"数"的"数"的"数"的"数"的"数"的"数	Full moon.	01	06	
(Full moon. 07 08 15	Q Last quart.	0.500.000		44
Laft quart. 15 06 09	New moon.	2010年1月1日	22	51
New moon. 21 24 17	3 Field amount		21	04
(First quart. 25 20 03	First quart.	23	22	51
	CFull moon.	30	16	13
Full moon. 07 00 08			and the	
	& (Laft quart.	06	12	00
	New moon.	14	15	35
New moon 21 04 34	First quart.	22	11	02
First quart. 37 10 25	Full moon.	20	02	24
(Full moon. 35 10 19	Last quart.	06	OF	2
2) Last quart. 12 20 03	New moon	14	31	23
New moon. 19 13 24	First quart.	CONTROLS CO.	DODGE PARKET OF	09
(First quart. 127 03 54	Full moon	DESIGNATION FOR	23	12
	Full moon.	201	13	50

Four Luminarian Eclipses will bappen in this Tear 1713, in the sollowing Order.

1. The first will be an Eclipse of the Sun, on April the 22d day somewhat after o in the Morning, in & 12 degrees, 18 minutes, but not visible to us by reason of the Moons North Latitude, tho' a great Eclipse of it self. 2. The second will be a Lunar Descent on May the 7th, somewhat after our Noon, in M. 26 deg will be a Lunar Descent our sour Antipodes the Moon will be 8 Digits darkned. 3. The third will be a Solar Deliquium on October the 16th, about our 9 a Clock in the Morning. This, (like that in April) will be an almost total Descent, our not to be seen of us, it is Celebrated in 3 deg. and 13 min. of Capricorn.

The sourch will be a Lunar Obscuration, on October the 31st, at or about 4 in the Morning, it is made in & 18 deg. 7 min. and may be seen with us, if the Aler be clear, to more than 8 Digits darkned.

A Table of the true time of High-water at Lond Bridge, according to the Moon's Southing

Moon. Tide	Moon Tide	Moon! Tide	Moon Tide
South. London.	South. Lundon.	South London,	south London
H. M. H. M	H. M.H. M.	H. M. H. M.	H. M.H. M.
XII 00 03 0c	III 00 05 15	VI 200 07 .30	[X :00 11 15
10 03 09	TO 95 21	10 07 41	Lott 39
29 03 18	2005 27	20 07 - 53	30日 43
30 03 27	30.05 39	3000 04	
40 03 36 50 03 45	40 05 40 50 05 46	50 08 25	10 15 14
Transmission of the Parketter Co.	IV 00 05 52	VII 00 58 36	X 00 13 27
1004 02	10 07 59	1008 48	10 12 50
20 04 09	20 06 06	20 09 00	30 21 03
30 04 16	30 06 13	30 09 13	
40 04 23	40 06 20	4009 20	3001 42
50 04 3c	V 00 06 36	VIII 00 09 59	XI 00 01 54
IL 00 04 37	V 00 06 36	VIII 00 09 53	10 02 02
10 04 44 - 20 04 5c		20 10 20	20 02 16
30,04 57	30 07 02	30 10 33	30 22 - 15
40 05 03	40 07 11	40 10 47	4 22 30
50 05 09	5007 20	2017 QL	

The Description and Use of the following Table of Tides on the Sea Grafts of Great-Britain, Iteland, Norway, Holland, Flanders, France, Biff cay, Sc. Shewing what Moon makes Full Sea in each of these Places, every Day of the Moon's Age, after the Full or Change.

First you are to understand, that in the first Column of the Table is the Age of the Moon after her Full and Change; and the second and third Columns thew the Hour and Minute of Full-Sea at each respective Place mentioned in the faid Tables, and the fourth Column sheweth the Names of the faid Places; and the fifth sheweth the Setting of the Tides upon the same Point of the Compass expressed in the Title. And also in the Title you have the Hour when the Moon cometh upon each Point of the Compass, at Full and Change. The Use of which Table shall be further illustrated by this following Example.

Suppose you would know what Moon makes Full Sea at Dartmouth and Torbay, and at what Hour it cometh to such a Point of the Compass, and the time of High-Water any Day of the Moon's Age. First, Look for Torbay or Dartmouth which you will find under the Title of East by North, and West by South, which doth shew, that at the Full and Change of the Moon she cometh on that Point of the Compass at 5 hour 15 minutes, and then it is Full-Sea in the forementioned Places. So likewise if it be demanded, what time it will be Full Sea when the Moon is six days after Full or Change? Therefore look in the first Column for 8, and right against it, in the second and third Column, you will find 10 of the Clock, and Minutes past, which is the time of Full Sea in the forementioned Places, at that any of the Moon's Age.

	AND SOUTH AND A STATE OF THE ST	
12 48 of Flanders. At the 1	Minutes. Setting of the coaff Tides upon the North foreland. At Same Point. Before the Hever, From the	を発生を
504 of fordreft; in the Cand	achy Shore. At Or-leign.	
80624 and the life of Wight 90712 tween Usbant and Si 1008 of Graveling. Before Ch 1108 48 Race of Blazers	In the Sleeve, be-	
1209 36 Kentish Knock; Spirs, 2 1310 24 Port Defire in South 2 1411 12 Centin to Bojador on 15 14 00 bary.	and alongst the Swin	ALC: NO.
15Haloolbary.	the Coant of Bar.	

North by East, and South by We

D.H.M.	Hollin by East, and Son	uth by West,
01245	12 Hours, 45 Minute	Setting of the Tides upon the
202 21 At (harnsey. At Flushing	The Point.
403 57 Within	the Maes. Within To	From Boleign to the Some. The from Staples
605 23 Nouer.	mber of Rie. West e At Rochester, and M. North Caen.	adden. At to Boleign,
80709	5.14071B.Caen.	
100845		
12 10 21		A Company
13 11 09		
151-2145	Alexander of the second	

North North East, and South South West.

D. H M 00130	on Hour, 30 Minutes	Setting of ebo Tides upon the (ame Point.
alone lerveer.	the Maes and Goree. Be The Weilings. On the Coal	fore From Calice
4 04 42 Zealand. 5 05 30 Before T	Carmouth. In the Downs. The	wart
7 07 06 Wight.	Without Calice and Blacks At Bell-Isle, under Holy is. b. Gravesend. At Carpus Ch.	and In
10 09 30 Point.	Edam, and before Camfere.	mel.
13 10 54 wick. (14 12 42 Coaff of	Ramkins and Camfere. At On the Coast of Finmark. Fraits Mouth to Cape Cantin on Barbary.	the

North-East by North, and South West by South.

D. H. M 002 15	02 Hours, 15 Minutes:	Seiting of the Tides upon the
2 03 51	Without Bluet. Before the Mass. Before the Weilings. St. Andrews. Denby. Without Fountnay.	Between Calico and
4 05 27 5 06 15 6 07 03		Dover. From Dunkirk to Graveling.
7 07 51 8 08 39 9 09 27	the state of the sound of the sound of	From Staples to Ferane. From Dart-
10 10 15	Long of Beautifieds with	mouth to Ex-
13 12 39 14 01 27 15 02 15	(BE) 1963年,2014年,2015年7月1日 1963年2月1日 1963年1日 1963年1日 1963年1日 1963年1日 1963年1日 1963年1日 1963年1日 1963年1日 1963年1日 1	tropping of the first

North Patt, and South West.

103 Hours, 30 Minutes. Setting of the Tides upon she At London, Amsterdam, Dort, Rotterdam, fame Point. 1 03 48 Zerickzee. Before Newcastle. In Robin-04 36 hoods Bay. Before the Tees and Hartle- From Cape of 24 pool. Without the banks of Flanders. Be Hague to Al-From Cape de 06 12 ween Calice and Dover. Before Conquet, derney, through 07 00 the Pens, Groy, Armentiers, Use, Killiars, the Race of 07 48 Porthus. The River Bordeaux. The South Alderney. From 7 08 36 Coast of Britain, Gastoin, and Poistou. Garnsey to the 8 09 24 The Coast of Biscay, Galicia, Portugal Caskets. From 9 10 12 and Spain, North-cape, from the Race to Milford to 10 11 30 the Polehead: Before the River of Nantz, Ramsey. 12 12 36 Tide at Flamborough head; on the West 13 01 24 Coast of Ireland: At Buchiness, and Ork-02 12 nefs. In Shetland, and Fair Iste. At the I-15 03 00 fland Teneriff. At Cape Bona Esperanse.

North-Eaft by Eaft, and South West by West.

DHM 03 Hours, 45 Minutes.	Setting of the Tides upon the Same Point.
Between Dover and Calice. At the Maes. At Roven, Silly. Before St. Matthews Point. At Brest. In the Sound. Berween Ushant and the Main Before the Bass. At St. Matthews. Be fore Rochel. The River of Bourdeaux. Biog. Within the Haven. On the Coast of Spain, Portugal, Galicia. The South It 1233 Coast of Ireland. At Hunclissoot. Half. Coast of Ireland. At Hunclissoot. Half. Tide at Flambrorough-bead. Quarter-Tid. 1201.21 Tide at Flambrorough-bead. Quarter-Tid. 1202.57	From the Liz- ard to the Start. From Cape Cleer unto f Londey.

East North-East, and West South-West.

D.H.M.		Secting of the
00430	04 Hours, 30 Minutes,	Tides upon the
105 18	D.C.	Same Point.
205 06	before Humber; Flambrough, Scar-	From Oftend
306 54	Before Humber; Flambrough, Scar- rough, Abberwarck. In Falmouth. In	to St. Cateline.
40742	Mouse Hole. Sept. Isles. Without the laven, in the Broad Sound. With-	From Berch-
50830F	laven, in the Broad Sound. With-	fleur to Struffere.
I CIGOTION	TOUTH ALL THE SOUTH COST	THE RESERVE OF THE PARTY OF THE
710060	of Ireland, as Kinfale, Cork, Toughall,	Con Change of
1 FOIL 213 CIP	of and of Marinetts. At the Roy	and the Holm.
11011191	Thin Cinemi. At Calles in the Creek	unto Braftel.
1202061	ungar ven. Baltimore Winking	From Sally to
1302 14/	dounts-Bay. In the Sea of Wales and	the Lands end
1403 12 5	evern.	From the Stare
15/04/30		o Portland.
		S. S

East by North, and West by South.

D.H.M 0'05 15 1 06 03	05 Hours, 15 Minutes.	Setting of the Tides upon the Jame Point
408 27) 509 15	In Dartmouth and Plimouth, Found Torbay, Falmouth, Milford, Ramery. In Wales, thwart of Londey Before Lin. In all the Havens on the South Coast of Ireland, and in the Bay of Carnarven. At the Mouth	to the Fourn. From the
8 1 1 3 9 0 9 1 2 2 7 4 10 0 1 1 5 6	of Severn. Between Silly and the Lizerd. At the Spurn, Newcastle, and Humber. At Magniese and Colds.	Cleep. From
11 02 03 12 02 5 1 13 03 3 9 14 04 27 15 05 13		Wight. From Wight to Beachy.

East South East and West North-West.

D.H.M.		Sei	ting of the
10878	07 Hours, 30 Minut		upon the Point.
20906 Th	wart of Plimovib, at	d of the Fr	om the
4 10 42 ara	in the Channel. A by the Land. Between	1 Moulhold ack	o St. Mile-
612 18 mid@		Kilduya Berci	trom blace to
70106 ln to	he Road of the Text by Wieringhen. At	A At the Soyn	book.
90242 trance	of the Emes, of	the River	
11 04 18 Friez	land and the Fly. A	digora Ha	
13 05 54 rolling	At Cape Cleer, Flori	da, un (a)	
14 06 42			
AND THE PERSON NAMED OF TH		laginga (1975), aliku ja ja 1980 (1991). Pin 1992 Kanadan pagusal melikuran kanggaran pengalangan pagunan pagunan pagunan pagunan pagunan pagunan pagunan pagun	

South East by East, and North West by West.

DIE M	
00815 08 Hours, 15 Minutes. Tider 1	
10902	sint.
20951 Thwart of the Island Wight in the Beh	ind
3 1039 Channel Without the Caskers in the Guark	g in the
arang Beachy by the Shore Without the say	Done that
60103 Fly. To the Westwards of the Seven. 70151 Foreland. In St. Magnes Sound. Tar- 80239 mouth. At St. Helens. Machnels- 90327 Castle. Dublin and Lambey. Cape Serre-	Mands
70151 Foreland. In St. Magnes Sound. Tar-	
80239 mouth. At St. Helens. Maconeis-	
1004 15 lione in Guinea.	
110503	1 1 2 1
120551	
13 06 39	
14 07 27 15 08 15	83
115 0815 Ff	

South-East, and North-West.

D. H	1 N		Setting of the Tides upon the Jame Point.
0.00	DECLER USED	Between Guarnsey and the Caskets. At	In the Bay.
1 3	1 1 2	4 the Race of Portland At the East-end	of Benuyt.
4	121	2 of Wight. Within the Seyn. Before	Between
5	010	Cromer, Winterton, and Tarmouth-Friz	Morleaux and
		8 and Wieringen Flat. On the Coast of	
7	02 3	6 Friezland. Before the Eastern and Wes-	Pots.
. 8	03 2	4 tern Emes. Before the Fly and Schol	
		2 balgh. At Egmont, and Harlem off Bass.	
		Before the Caskets and Guarnfey. A	
111	C5 4	8 Orkney, Dunbar, and Kildny. At Fair	
12	06	6 Isles, Seven-Clifts. At Home-head, and	
		4 thwart of Plymouth and Dartmouth. Isla	
		2 of Man, and Careness. At the three	
15	150,0	ORivers in Canada.	t and the

South-East by South, and North-West by W

	itu Latt by South, and 140	Ten vicit of	13,480
D.H.M 00945	o9 Hours, 45 Minute	Setting of the Tide upon the fame Point.	
3 1 2 09 The 4 12 57 the 5 01 45 kets 6 02 33 At I	wart of Leystaff without Needles, at the Isle of Channel thwart of Wight thwart of Garnsey in the Junnose, Tergou, Orfordness b. At Leystaff, and at Control of the control	Wight. In cala, and the The Cas Island of St. Che Channel. Michael.	е
8 04 09 At (ape Blanco in Africa.		30
110633			
120721			
140857		7.2	12 A

South South-East, and North North-West.

111	10 Hours, 30 Mins	Same Point,	語の時間の
2 13 3 14 4 01 5 02 6 03 7 04 8 04 9 05 10 06	At St. Hellens, and the Control of the River of Thames Between St. And Leystaff R. 18 of Wight and the Main. At Strusaert, and all the Coast 42 and Picardy. Calice Road.	Cows. At Or From Berebout the Banks, fleur to Al. Road. Before bonga, ween the Isle From Cape Bulleyn-deep, Dorsey to the of Caen. At Island Darden. of Normandy In the Frith.	では、日本のでは、日本には、日本のでは、日本のでは、日本のでは、日本のでは、日本のでは、日本のでは、日本のでは、日本のでは、日本ので
1208	of Orford and Orwel-Waves. In 54 Road. In the Downs. Ar S.	d. Between	

South by East, and North by West

	COLUMN TO SERVICE STATE OF THE	aris aris ratelli	DA ALCIC	
D.H. _I M			1 2	
01115	11 Hours	, 15 Minutes.	Tides	ing of she
11203		以及	The second of th	
21251	At Cows and Sands, and Hampton	Orfordness wi		
30139	Sands, and Hampton	n. Port (mouth.	and Dun 3	m St.
402 27	nose. Before the	Haven of Caer	Fair D	iews-
503 15	Maze and Warhe	ch within. Bet	ween the p	to the
60403	Naze and Warhe Chamber and Gore	ad of Lower.	In the Dake-	Ovens.
70451	Chamber and Gore	-end. Between	Crivole- 110	m Font-
		yl. In the Fi	ith and mey to	ot.
12 A SCHOOL SECTION	before Margate.		D	ews-
100715			Point.	
110803				SWI
120851	Tadul Carrier		1 1 1 1 1 1	of the last
130939		104	10 10	161-16
14 10 27				
	COLUMN TO THE PROPERTY OF THE	하면 사용하는 아이들이 나는 사람들이 되었다면 하는 사람들이 되었다면 하는데 되었다.		

220 A Cable of the Sun's Right-Accention.

	\mathcal{J}_{i}	17).	Fe	br.	Ma	rcb.	Ap	ril.	M	ay.	Fu	ne.
3	O R	CONTRACTOR OF THE PERSON NAMED IN		light		ight	⊙ R	ight	OR	ight	O P	ight
S	Afc	en.	Afe	en.	STATE OF THE PARTY OF	en.	Afc	en.		en.		en.
	11.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
	19	35	21	42	23	28	OI	21	03	14	05	19
2	19.	3.9	-21	46	23	32	OI.	25	03	18	05	23
3	19	43	21	5.0	23	36	01	29	03	22	05	27
4	19	47	21	-5 4	23	39	10	3.3	03	26	05	3.1
5	19	51	21	58	23	4.2	01	36	03	30	95	26.
6	19	56	22	02	23	46	OI	40	03	34	05	40
1	20	00	22	06	23	50	OI	44	03	38	05	44
6	20	04	22	10	23	53	OI	\$7655 C 386	03	4.2	05	48
9	20	99	22	14		57	10	51	03	46	05	52
10	20	13	22	17	00	01	01	54	03	50	05	56
11	20	17	22	21	00	05	10	58	03.	54	06	io
12	20	22	22	25	00	08		02	03	58	06	04
113	20	26	63,530	29	00	12	02	06	04	02	06	08
14	20	30	22	33	00	15		• IO	04	06	06	12
122	20	34	22	36	00	19	02	13	04	10	06	17
16	20	38	100	40		23	02	17	04	14	06	21
17	20	42	10000	44	00	26	02	21	04	18	06	25
18	20	46	22	48	00	30	02	25	04	22	06	29
19	20	50	22	52	00	33	02	29	04	26	06	33
20	20	54	22	55	As Water	37	11.30	32	04	30	06	38
21	20	58	22	, 59	00	41	200	36	04	34	06	42
22	21	03	23	. 98	00	44 48	02	40	04	38	06	46
23	2 I	07	23	06	00	52	1.000	44		42	06	50
24	21	115	23	10	00	\$150 LOS (\$17)	02	40	THE RESERVE AND ADDRESS.	46	06	54
26		TOTAL STREET	45	13	MARKET ST. 5	Marie Control	-	51	04	50	06	58
	21	19	23	17	00	59	02	55	04	. 54	07	02
27 28	21 21	23	23	21	10	03	02	59	04	58	07	06
29	21	27 31	23	25	10	10	03	03	05	02	07	10
30	21	35	3,000		01	14	03	67	05	06	24-20 Sept.	14
31	21	38	1		oI	17	03	10	05	11	07	19
131		30	,						05	15	2002	别为人

		Fu	ly.	Au,	euit	Sep	iem:	Ulto	ber	Λου	em.	Dec	em.
	D	14 C 75 C 15	ight				ight		ight	OR		⊙Ri	C ~CONCRETE STORY
	ays.	Afc	STATE AND DESCRIPTION OF THE PERSON OF THE P	P.L (1053	er.	The state of the s	en.	Afe	25 m 22 b 25 g	Ale	201100	Afc	en.
13 18		H.	M.	H.	M.	Н.	Μ.	Н.	M.	H.	M.	H.	M.
1.6	1	07	23	09	25	11	19	13	-08	15	97	17	15
10	2	07	27	09	29	FL	-23	13	12	15	11	17	20
1	3	07	31	09.	33	11-	126	Tal.		115	15	17	25
	4	07.	35	0.9	37		30	13	12	15	19	17	29
		07	52 800 m	09	40	190	2.2		221	1)	23	17	34
	6.	07	43	69	144	II.	37	13	- 26	15	27	17	38
	1	07	47	09	40		41	13	30	12	31	17	42
	9	07	35	0.0		11	44	1.5	34	15	36		47
	Switch.	07	59	THE TANK	7) 58	H	51	12	4.7	15	45	17.	51
ř	11	08	03		CONTRACTOR OF THE PARTY OF THE	11				ACOMICANO	COMPANY OF THE PARTY OF THE PAR	ALE POR	56
	discuss.	08	97 97	经直额		11	55	12	45	15	49	DESCRIPTION OF THE PERSON NAMED IN	05
17	13	c8	11	10	10	12	02	13	51	15	W0.400.000	18	09
	100m200 a little	08	15	10	14	12	06	13	57	16	SECTION .	18	14
1	15	08	19	10	17	12	09	14	co	16	c7	18	19
	16	08	23	10	21	12	13	14	04	16	il	18	24
	17	08	27	10	25	12	17	14	08	16	15	18	28
6,556 Sp(3) 200 200 200 200 200 200 200 200 200 20	18	08	31	10	28	12	20	14	12	16	19	18	33
100	19	08	35	200 PG	32	12	24	14	16	16	(8), 210, 687	18	37
	20	08	39	10	35	12	27	14	20	16	28	18	41
	21	08	43	10	39	12	31	14	24	16	32	18	45
	22	08	47	10	DATE OF THE OWNER, WHEN	2 (USASS)	0.00	0.000.00	28	16	36	18	49
	23	08	51	10	46	- PERSON	通用和	14	32	SECTION.		18	34
	24	08	55	EL CONTRACTOR	50	64 1779 566, 20	42	14	3.6	16	44	16	58
	25	68	58	No. of Concession, Name of	53	50 100 100 100 100	. 4	1	34	10	49	19	03
	26	09	02	NO. 10 Sept. 1988	:460/IFEME	DE HERBESCHE	P. P. San and St. St. St.	10 Calvid Nation	43	16	53	19	07
1000	27 28	09	06	B 12777	01		100000000000000000000000000000000000000	14	47	16		B 865, 23(3)	11
100	29	09	12	Contract of the Contract of th	04		MARINES JUST 18	\$2 \$25E.95061	51	17	02	10 Km 10 10 10 10 10 10 10 10 10 10 10 10 10	16
7	30	5 5000 4000	1.	ALL PROPERTY.	11	42 (5)453575	使用的主题的运行	14	55	17	06		20
大	31	109	HE PARTY OF THE	507, Robus 771	15	98 B220751		14	59	17	. 1	19	25
	A APRIL					3			-3	T		.17	301

A Table of the Fired Stars.

A Table of Right Ascension and Declination of some of the most notable Fixed Stars.

	IX		ight		cli-	N.or
Stars Names.	gnit.	H.	cens.		ion. M.	or S.
Dole Star	02	03	32	87	33	N
The upper of the two foremost of the Square is	n the 02	14	51	75	36	Z
The upper of the two foremost of the Square in Great Bear — — —		10	43	63	32	Z
The lower of the two foremost of the Square in the	Great	10			08	N
The lower of the two latter of the Square of the (41	58		N
The upper of the smo latter in the Square of the	Great 02	11	_36	55	33	
Bear	02	11	59	BT065-168	51	N
Last but two in the Great Bear's Tail-	02	12	N/3200	SEC. 12	47	N
Last but one in the same	02	13	10	56	41	N
Last in the same	02	13	34	51	00	N
The Dragon's Tail	02	13	59	65	56	N
Arduras -	0.1	14	⊙ 1	20	58	N
Brightest in the Crown	02	15	21	27	51	Z
Brightost in the Harp Swan's Tail	10	18	26	38	30	Z
Perfeus Right-Side	02	20	30	44	05	77
Goat or Capella-		02	5.7	48.	36	N
Auriga's R Eht Shoulder	01	04	452	45	37	Z
Brightest in the Sorpent's Neck	02	05	44	44	56	N
Brightest between the Eagle's Shoulders	02	15	##E000000	08	30	N
First in Pegasus Wing, or Marchab	01	19	35 48	13	28	N
Beginning of Pegasus Leg	92	22	48	26	18	N
End of Pegafus Wing	- 02	23	57	13	22	N
Andromeda's Head-	02	23	52	27	18	N
Southermost in Andromeda's Girdle	- 02	00	51	33	55	N
Andromeda's Soushermost Foot	- 102	01	44	40	44	N
The Bull's Eye, or Aldebrand	- 01	Mark 1	17	15	48	N
End of the Bull's Horn-	02	05	06	28	21	N
Caftor -	02	07	14	32	33	N
Pollox	02	07	25 (2806)	28	46	N
Bright Foot of Gemini	02	06	19		38	N
Brightest in the Lion's Neck-	02	10	02	21	29	N
Lion's Heart	10	09	51	13	33	N
Lion's Tail	- 01	11	32	16	25	N
Virgins Spike		13	17.753 (49.66)	09	31	S
Southermost Scale of Libra	- 02		33		37	S

Stars Names.	Magnir,	Afc	ght enf, M.	nati	ion.	N.or S.
Northermost Scale of Libra	c2	14	59	08	07	S
Scorpion's Forebead	02	15	46	18	51	S
Scorpion's Heart	io i	16	10	25	37	S
Fomabant -	01	22	39	31	17	5
Whale's Jaw -	02	02	COST 1840, 1930.	02	48	N
Orion's Right Shoulder	02	95	44600	\$600000 A0000	18	N
Orion's Left Shoulder	02.	05	08	06	01	N
First in Orion's Belt -	02	05	15	00	3.5	S
Middle of Orion's Belt-	02	25	20	01	26	S REPORT
Last in Orion's Belt	02	05	24	463000.2	09	S
Orion's Left Foot, or Regel	01	04	. 59	08	37	5
Mouth of the Great Dog or Syrius -	01	06	31	16	14	12
Right Forefoot of the Great Dog	02	06	09	17	49	S
Little Dog's Thigh	02	07	22	06	03	M
Hydra's Heart	01	109	. 12	107	15	LS

To know the Hour when any Star cometh upon the Meridian.

The Rule. First leek the Right Ascension of the Star, and also the Right Ascension of the Star subtract the Right-Ascension of the Sun. But when the Right-Ascension of the Star is less than the Right-Ascension of the Sun, then add 24 Hours thereto, and the Remainder will shew you the Hour Asternoon when the Star cometh upon the Meridian; and if it does exceed 12 Hours, then subtract 12 Hours therefrom, and the Remainder shall shew the Hour and Minute of the Star's coming upon the Meridian after Midnight

Ex. 1. Upon the 10th of April, I would know when the Lion's Heart cometh upon the Meridian: Therefore if you look in the Tables of Right-Ascension and Declination for that Star, you will find it to be 9 Hours 51. Then look in the Tables of the Right-Ascension of the Sun, and right against the 10th of April you will find the Right-Ascension of the Sun to be 1 Hour 54, which subtracted from the Right-Ascension of the Sar, there Remain 7 Hours 57, which is the Time that the Star cometh to the Meridian Asternoon.

Ex. 2. Upon the 5th of November, I desire to know when the Bull's Eye cometh upon the Meridian. The Right-Ascension thereof by the Tables you will find to be 4 Hours 17', the Right-Ascension of the Sun that Day is 15 Hours 23'. Therefore because the Right-Ascension of the Stars is less than the Right-Ascension of the Sun, I add 24 Hours to the Right-Ascension of the Star, which maketh 28 Hours 17 min. From which subtract the Right-Ascension of the Sun, and the Remainder is 12 hours 34 min. stom which I subtract 12 hours, and the Remainder is 54', So that the said Star cometh upon the Meridian 54 min. after Midnight.

And here note, That the Table of Right-Ascension of the Sun is calculated for Noon every Day, and that it doth encrease by about 4 min. Each Day; so that it may be proportioned, by allowing for every 6 Hours after Noon one Minute.

A Table of the Latitudes and Long tudes of the principal Ports, Harbours, Capes, and Illinds, in most of the known Parts of the World: Beginning from the Meridan of London. Collected from the best Charis, Descriptions, and Observations of several able and experienced Nevigators of our own, and other Nations.

Names of Places, Latitude. Longitude N. or S. E. or W.	Names of Places. Latitude. Longitude N. or S. E. or W.
Greenland. D. M. D. M.	Coast of Lapland and D. M. D. M. Norway.
Fair Foreland: 79 20 N 14 12 E Black Point - 71 08 N 27 12 E	Fox Nofe
Court Look out 76 30 N 14 35 E	Cape Race 65 50 N 22 00 E Island Kilduyn 69 15 N 32 00 E North Cape 71 24 N 22 10 E
Inpeleis Isles 77 to N 21 oo E	Ross Isles — 67 02 N 08 10 E Catinels — 61 55 N 02 50 E Bomel - 59 00 N 03 45 E
Hope Island	Naze of Norway - 57 50 N 06 45 E. The Sea-Coast in the Sound.
Young's Foreland 71 16 N 10 05 W Young's Foreland 71 25 N 07 40 W	The Nyding 57 04 N 07 40 E Cape Cole 56 25 N 12 46 E
Sea-Coast of Nova-Zembla,	Scarlet Island 56 10 N 11 54 E Falsterborn 55 30 N 13 50 E Abbo 60 27 N 20 12 E
Orange Island	Wyburrough 61 05 N 35 00 E Dagaret 59 16 N 20 46 E Dormanel 56 20 N 19 25 E
Cross Point 72 20 N 52 40 E Freeum Burough	Gotland — 57 30 N 16 40 E Horrefound — 58 45 N 14 56 E Gothfound — 58 15 N 17 05 E
River Obji in the 3 69 15 N 62 53 E Mauririas Isle - 69 30 N 44 20 E	Earth-Holme 55 36 N 14 30 E Burnt-Holme 55 33 N 15 46 E Ellenore 56 20 N 12 35 E
Sea-Coast in the White Sea.	Coast of Flanders from the Scaw to Calice The Scaw 57 23 N 69 46 E Bovenberg 56 21 N 65 55 E
Archangel — 64 30 N 37 45 E Swelgenose — 69 13 N 43 30 E Cape Candenose — 69 20 N 41 32 E Orologenose — 66 50 N 36 45 E	Holy Land 54 19 N 64 15 E The Texel 53 66 N 05 12 E
Orologenole 166 so N 36 45 E	Callis 50 54 N of 45 E

	•	22				
Names of Places.	N. or S.	E. or	W.	Names of Places.	Latitude. N. or S.	Longitud E. or W
Sea-Coast of Isleland	D. M.	D. N	1.		D. M.	D. M.
Langeness -	66 38 N	17 0	s W	Cofwell-Point -	1 11 10 11	TO THE SAME OF THE PARTY OF THE
Grinle	67 46 N	24 34	W		54 37 N	06 42 V
Maze	68 22 N	26 0	4655 17.6	Aron Ifle	22 10 N	06.30 V
Andifer — —	66 20 N	22 0	w	100 PRODUCT TO THE TEXT TO TH	54 55 N	09 45 V
Snowhill-	65 25 N	33 0	w	Sline Head	53 52 N	11 45 7
Alera Point	64 to N	22 4	W	12 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	53 21 N	10 12 V
Westmonia Isles-	62 20 N	25 25	W	Blafques Gare -	52 ao N	11 53 N
Merchants Foreland	61 10 N	16	W	OHAMAH	51 08 N	10 06 V
Whale's Back	65 20 N	4	W	THE PARTY OF THE P	51 40 N	09 05 V
Comments of the Comment of the Comme	The second second second	1755 BEST 18		THE RESERVE TO SERVE THE PARTY OF THE PARTY	152 07 N	08 12 V
Islands near the C	医防护性炎 医性性腹腔炎 二十五分的	CONTRACTOR AND MADE OF		Coast of France, S	pain, and I	ortuga!
Sky Island-	57. 52 N	09 36	W	Sain Head	LIOLIN	Service Carrier
bky Illand-	57 00 N	05 12	W	Cape de la Hague	40 47 N	21 22 V
Lewis Island —	58 12 N	06 47	W	Caskets ————————————————————————————————————	10 10 1	33 4
Fro Islands	62 00 N	08 00	W	Guarniey -	49 13 1	01 20 M
Sherland	60 00 N	03 0	W	Terfey-	49 33 1	02 28 1
air Isle	59 28 N	04 40	W	Ufhant -	49 20 1	02 12 N
sles of Orkney-	59 10 N	03 16	W	Oleroon	40 30 IV	35 23 V
- demonstrated to the desirable	Mary Contract of			Cape de Machia		
Coasts of Scotla	rd, Englai	na an	a	Cape Pinas————————————————————————————————————	43 35 1	03 07 D
Trela	na.	先有是		Cape Orregal	43 45 N	06 e4 N
Catnels	58 56 N	OI 42	W	Cape Finisterre	44 12 N	97 43 V
Buchanels	57 50 N	00 26	w	The Rock of Liche	42 58 N	10 00 W
St. Abb's Head -	56 27 N	04 17	W			
Tinmouth -	55 08 N	02 00	W	Cape St. Vincent -	37 15 N	10 35 M
Flamborough Head-	54 07 N	00 1	F	Cape St. Maria	36 48 N	09 24 W
The Sporn————————————————————————————————————	52 24 N	00 12	F	Straits of Gibralter-	35 32 NI	06 56 W
Wintertonnels -	52 44 N	GH 12	Ā	Coast on the N	fain Contin	ent in
Orfordness	52 12 N	OT O	ī	the St	raits.	
The North Foreland	51 25 N	01 06		Cape de Gar	m6 e2 33	
South Foreland-	er 08 N	01 00	-	Cape de Gat	30 30 N	91. 13 M
Dungeness -	50 56 N	01 04		Cape St. Martin-	30 20 14	or 42 E
	50 40 N	22 47	L	Cape Dega Frito	41 32 N	03 12 E
	50 29 N	00 48	TH	Cape Larei	42 50 N	06 29 E
	50 09 NI	52 50	11)		43 50 N	08-20-E
	50 08 N	03 40	W	Terraciana ———————————————————————————————————	41 25 N	13 25 E
0 1 6 000	49-56 N			Cape Sparteventura-	38 00 W	17 43 E
A COLOR OF THE PARTY OF THE PAR	49 56 N	00 44	W	Cape Collum	39 05 N	19 Ly E
Ce Davide Head	51 20 N	4 41	W	Cape St. Maria	40 00 N	10 13 E
Sr. David's Head-)2 00 N	05 20	W	Angello	41 48 N	17 50 E
The state of the s	52 42 N	05 05	W	Aneana	43 54 N	T4 02 E
I A C	53 25 N	94 57	W	Cape Cena-	43 27 N	16 44 E
Ifle of Man	53 42 N	04 55	W	Raguía	43 45 N	In an E

		Longitude	News Change	Larienda I damenta					
Names of Places.		E. or W.	Names of Places.	N. or S.	E or W.				
	D. M.	D. M.		D. M.	D. M.				
pe Linga		20 58 E	Cephalonia	38 10 N	22 33 E				
pe Matopan -		23 35 E	West End of Candia	37 42 N	22 35 E				
ipe Sr. Angelo		24 44 E 27 13 E	East End of Candi	35 20 N	24 30 E				
pe Doro	39 10	28 22 E	Rhodes	36 40 N	29 47 E				
ape Saradoni —	-36 12 Z	30 38 E	Welt End of Cypru	5 25 25 N	22 22 E				
ape Pollopollo		37 32 E	East End of Cypru	8 35 54 N	36 16 E				
ape de Becur -		32 45 E	Sea-Coast of I	Barbary and	Guiny				
ape Roatini	- 32 15 H	25 30 E	To the first of the contract o		ACCUSED AND ADDRESS OF THE PARTY OF THE PART				
ape Rozato —	- 33 42 E	21 20 E	Cape Spartel ————————————————————————————————————	35 24 I	07 09 W				
ape Bona	STATE OF THE PARTY	12 32 E	A SO A SE	32 42 1	08 54 W				
ollo		06 50 E	Lape Blanco	- 1 ra 26 N	JI II				
unis		00 06 V	Cape Verde -	- 14 43 1	1 17 22 W				
ape Falcon —		02 25 V	Sirre Leone	07 32 1	V 13 12 W				
langier		07 16 V	V S. Side of St. Anne.	- 06 41 1	V 16 48 W				
公司 公司 (1985年) (1985年) (1985年) (1985年)	ithin the Str	MACHINE DECISION NAMED OF THE OWNER, THE OWN	- Cape de Palmas -	- 04 00 1	107 12 W				
Illands W	itain the Sti	第二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十	Cape Tres Puncta	s - 03 45 d	01 50 V				
Alboran	35 54	02 40 F	Cape Formola	04 13 1	N c6 22 E				
ormentara		o1 36 I		03 28 1	N 09 16 E				
vica		03 36 I	- Illiand Chocos	00 00	MI Q U				
Majorca ———— Minorca ————		04 12 1	Island St. Thoma	- 00 00	08 20 E				
Gallatta	RESOLUTION BUILDING STORY OF THE PARTY OF TH	05 29 1	ATTENDED TO THE PARTY OF THE PA	01 25	S 10 12 E				
C. Pulo in Sard		09 37]	Cape Negro -	16 45	S 14 26 F				
C. Corlo in Con		09 34 1	Cape Voltas -	- 29 32	S 16 35 F				
Lilbo		11 15		nza 34 15	S 17 00 H				
Palmorolla —		Z 14 36		ftern Islands					
Uffica				- 40 02	N 32 30 T				
Maritimo	CONTRACTOR OF THE PARTY OF THE	12 52	Flores ———	39 31	N 32 25 1				
Limbadola,	36 56	13 40	THE RESERVE THE PROPERTY OF TH	39 00	THE RESIDENCE OF THE PARTY OF T				
Limola —	35 55	14 30		38 32					
Malta	36 00	15 50			N 28 26				
C. Paffaro in Si				39 33					
Meffina ——	38 17				N 23 47				
Liffa	43 03		E True	Canary Islan					
Trinity -	41 50		THE RESIDENCE OF MAJOR ASSESSMENT OF MAJORITHM	THE RESERVE AND DESCRIPTION OF THE PERSON NAMED IN					
Palagola	42 30				N 18 25				
Augulta	42 52	TOTAL STREET, ST. S. LEWIS CO., LANSING, S. L			N 19 00				
Corfu -	42 45		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	28 10	N 17 32 N 16 49				
Month 7	39 50	121 30	E Trico Tenerina -	128 30	Mac Mac				

					HEROLD BEST
Name of Phon.	N. or S	Longitude,	Names of Places.	Latitude. N: or S.	Longitude E, or W
	D. M.		Islands in East India		Name of the last o
Madera —	- 32 25 N	17 42 W	Romeyros -	29 00 S	68 00 E
ort Sancto	32 10 N	16 28 W	John de Lisbon-	Soo S	54 25 B
《	- 28 00 N	15 66 W	Diego Roize-	18 12 S	62 00 E
orteventura	- 38 co N	13 37 W	Sr. Branda	15-06 S	65 35 E
ancerotta	- 29 06 N	13 47 W	Dolgarias	1	64 15 E
ancerotta	29 00 1	13 47	Moroflas-	20 12 5	60 30 E
Cape de	Verde Islands	hysteric land	Moroflas Domafcaicas	20 45 5	56 00 E
t. Antonio -	- LITAS N	24 56 W	Sr. Appollonia	21 15 S	52 00 E
t. Vincent -	- 17 45 N	Resident Company of the Company of t	S.end of St. Lawrence	25 20 S	48 00 B
Sr. Lucia -				12 26 S	52 32 F
fle Brava	- 14 06 N	THE RESERVE OF THE PARTY OF THE	Bassos de India	21 99 S	36 25 I
de Hogo	14 20	25 20 W	John de Nova	117 22 S	142 061
file Fogo	14 45 1	22 42 W	Mayorra———	112 25 S	45 30 I
Mana Ida	14 50 N	22 10 W	Comore	9	42 27 1
Oc of Cal	- 12 12 13	21 58 W	De Naral	108 25 5	50 00
Describe	- 17 33 IN	21 52 W	1 TO 10 TO 1	00 23 8	30 20
Bonavista -	-110 29 N	21 52 W	De Almiranta	109 33 6	57 05
or, Matthews	-in 20 S	12 06 E	Domescaicubas	02 52 8	57 05
fland Anabona	- 02 00 S	06 12 E	St. Hermanas	03 20 3	62 25
Ascension			Diego Graviosa	03 00 3	00 00
St. Helena			Diego Gratiosa	HO EXPERSIONAL DESIGNATION OF	
Island Degialica			De Gamo-	02 45 3	81 01
Island Desistian -	3/ 50 5	06 42 E	Apolesia	-05 40 3	181 00
mand Denitran -	-130 40 3	100 12 E	Apoluria -	- 09 20 3	92 - 40
Coast of the Main	Continent in	East-India	Adu	10,25	75 10
Cana Anguilhas	1.4 8	(.D . 5	Cubile -	- 08 23 1	85 43
Cape Anguilhas Cape Corintes -	14 10 3	10 42 6	Monque	09 06 1	N 86 07
Cape Corintes -	24 07 3	30 30 5	Andaro	- 11 28 1	N 87 26
Cape de Guada	- 12 00 3	40 05 6	TANK TO A VALUE ORIGINAL	4 9 5 2 5 1	NEW CO.
Cape de Guard	ann 12 40 F	51 33 E	S. E. end of Sumar	12 05 13	10416
Cape de Rasal			Dantam -	05 45	10500
Surrat-		71 46 E	Baravia	06-25	10610
Goa	15 36 1	73 07 E	Combavia-	- 08 16	120 33
Cape Comerin -	08 30 1	177 32 1	Flores	- 08 46	122 45
S. W. Dof Ce	ylon 97 45 I	N 80 00 E	Timor -		12400
River Bengal -	22 10 1	1115 49 E		- 03 00	PROBLEM TRANSPORT AND PROPERTY.
River de Care -				- 03 09	12643
Siam -	14 18 1	1 100 41 E		05 30	5 11730
Cambodia		1 104 00 I	N.Point of Celebes	02 49	N 12225
Vischers Point -		V 108 00 I	Middle of Gilolo	- 00 00	1106 90
Point of Cavallo	s - 25 15 1	123 00 I	Bachian	- 00 03	N -128 12
Cape Somber -	27 48 1	N 122 06 1	Machian -	00 142	N 128 08
Nighai -		N 122 00 I		1	30、100
+Corea.	25 00	N 12500 I			7

663	Enth and				
Names of Places.	Latitude. N. or S.	Longitude E. or W.	Names of Places	Lanute. N. er o	rude V.
	D. M.	D. M.		D. M.	D. M.
Motir -	00 24	128 66 E	Cape de Passao-		86 25 W
Ponobackers -	00 30	128 12 E	Payta———— Truxilla———	04 32 5	85 00 W 83 00 W
Milorra	00 42	124 00 E	Villa la Nasca	- 08 10 S - 15 12 S	
Ternate	00.48	128 10 E	Arica	- 18 30 S	17 00 W
	04 12	120 46 E	Island Ferando - Baldivir -	33 45 S	85 40 W
N. Point of Borneo		11326 E	Port St. Cyprian-	43 15 S	80 25 W 81 22 W
Wend of Mindano		123 24 E	W. Entrance of	数据的现在分词 医克里克氏征	82 15 W
Amamba Narara	- 02, 40	108 41 E	Magellan Cape Horn	加州中岛 日本日本日本中,共和	See and the second second second
Sr. Juan		109 40 E	THE RESERVE THE PROPERTY OF THE PARTY OF THE	AND THE RESIDENCE OF THE PARTY	78 45 W
Tandaia	- 12 41 3	122 33 E	The state of the s	e Great Sout	CO CONTRACTOR OF THE CONTRACTO
	- 11 50 2	125 36 E	Honder Island	14 05	14030 W
Sebu		125 12 E	Water Islands Island Tiburones	14 52 S	162 00 W
Mindora	- 13 10 5	11729 E	Sr. Pedro	22 12	150 50 W
Paragoa	- 09 42	118 30 E	P. William's Iflan	nds-18 14 o	175 00 W
South-end of Luco		125 42 E 123 50 E	Island of Good-F States Land-	10pc 17 14 3	177 36 E
Middle of Aynam	NSERTO DESERVO POR PORTO DE LO SE	108 00 E	Green Islands	04 05	154 00 E
Formola		124 00 E	Saltedores Ife	06 36 1	N 154 04 B
Firando Isle		125 40 E	Miracomo Itland de Ladro	06 25 I	N 157 42 E
N end of Cikoko	- 34 10	132 12 E	Nadadores -	04 20	N 188 56 E
Tonia	33 20	135 00 E	Barbadoes Mes -	07 10	N 177 05 E
N, end of Japan Cape Freed in Je		14524E	Se. Peter's Isle -	11-15	N 173 00 W
C. Patience in Jese		168 00 E	Coaft on the Ma	S数子配置。 1000000000000000000000000000000000000	The state of the s
The Coaft of Ar	nerica in the	South-Sea.		SPECIAL CONTRACTOR	经验 人们只要的现在分词
Straits of Anian -	A STATE OF THE PARTY OF THE PAR	126 00 W	Lemair's Strait		S 60 40 W
Cape Blanco	42 30	131 00 W			
S. Francis Drake's		THE RESIDENCE OF THE PROPERTY	Cape Blanco -	47 28	S 62 15 W
Island Peraros	23 05		THE REPORT OF THE RESIDENCE OF THE PROPERTY OF THE PERSON		
Cape Corinres-		The second of th	Cape Frio -	22 40	The Property of the Control of the C
Aquatulco -	16 45	94 10 W	Baja de toda Sa	ntos- 13 30	5 40 15 W
Gulf of Salina	07 10	SHARING TO SELECT THE SECOND STREET, S		25/07/14/9/19 (03/8) 65/03/19/9/9/	THE PARTY OF THE P
Cape Corintas-	04 48	81 20 W		13 12	March Street and Application of the
Cape de Francisco	10-401 25	86 40 W	Suranam—	SECURES CO. 103-40 SECURES ROSSINGS SERVINGS	N 56 04 W

Names of Places	Latitude, Longitude N. or S. E. or W.	Names of Places.	N, or S.	Langitude E. or W
	The second secon	Islands in the West-	D. M.	D. M.
Cape three Points .	- 11 20 N 62 57 W	A 11 - 22 PROPE		A Particular
Cape de Coquiboc	12 06 N 71 12 W 10 33 N 77 36 W 14 37 N 86 04 W	Anguilla -	10 45 N	02 42 W
Cartagena -	- 10 33 N 77 36 W	South and Books	30 IV	02 34 W
Cape de Gratias	-14 37 N 80 04 W	Arreco Darbada -	17 50 14	45
Cape de Catoche.	- 14 37 N 89 50 W - 12 45 N 102 39 W	Gnardaluna	16 15 N	61 44 W
Capa Rexo -	- 22 45 N 102 39 W	Marigellance	16 or N	61 10 W
Cape Dianco-	- 20 90 14 103 00 11	The second second	27 3 4 4 4 4 4 4	
Cape Elcondido	- 19 50 N 92 20 W - 25 05 N 81 30 W - 34 38 N 75 00 W - 37 00 N 74 00 W - 37 26 N 73 35 W - 39 26 N 72 29 W nd 40 55 N 70 00 W	Martinero	44 8	61 00 10
La Florida	- 25 05 N 81 30 W	Col Incia	12 50 N	61 04 W
Cape Pair	- 34 38 N 75 00 W	Barbardoes	12 16 10	-8 W
Cape Henry—	- 37 00 N 74 00 W	Sc. Vincent	12 26 N	51 00 W
Cape Charles-	- 37 26 IN 73 35 W	Granada	11 c6 N	61 30 W
Cape May	- 39 20 N 71 29 W	Tobago	30 33	TO OF W
Come Cod	- 42 14 N 67 52 W	Point de Gallaia	10 4 N	-8 W
	- 43 00 N 72 00 W			
Cape Ann	-44 05 N 63 50 W	Manherar	IIA as NI	BY NO. WAS SECURITION IN THE
E and of the Ide	44 05 14 03 50 W	Margaretta	II AT N	62 26 10
e. end of the file	} 43 30 N 65 38 W	Torrogas	11 12 N	66 20 1
		Margaretta——————————————————————————————————	12 20 N	62 20 10
Cape Billalli	45 33 N 59 06 W	Bonayre	12 04 N	69: 20 W
Concension Bay	-47 50 N 53 22 W		12 26 N	66 to W
Bay of Bulle	- 47 27 N 93 35 W			
Cane Bona Villa	49 22 N 53 40 W	W. end of Hipaniola		
Pengwins Ifle	- 50 54 N 54 12 W			
Cane Gara	- 50 00 N 52 22 W	East-end of Cuba-	20 16 N	74 12 W
Bell Ide	-51 48 N 55 16 W	East end of Cuba- West end of Cuba-	121 40 N	84 16 W
		Camnamis -	20 00 N	82 15 10
Hlands in t	he West-Indies.	Great Caiman	20 14 N	80 22 W
Bermudas -	- 32 25 N 64 23 W	Santa Villa	17 20 N	82 15 W
Benama -	- 27 12 N 78 OA W	Malquito	13 42 N	
North-east Point	las sa Nisa	Guanabo -	16 10 N	
of Laucaonique	27 52 N 79.40 W	Guanabimo	16 12 N	40 GEODESHARDS, Detro Takoron.
Signateo	-25 20 N 74 10 W	Cozumal -	19,26 N	E DESERVO PRODUCTO CONTRACTOR OF THE PRODUCTOR OF THE PRO
Guatro	- 25 46 N 73 25 W	Laffelleiranes -	22 os N	A MICHELESCOPHISTORY OF AUGUST AND AND AUGUST AND AND AUGUST AND A
Guamina	- 25 16 N 73 20 W		ACTOR AND ASSOCIATION	A TOTAL PROPERTY.
Tiango	24 32 N 71 50 W		Parts of An	nerica
Majagana	- 22 56 N 71 46 V	Cape Camas-	153 39 N	1151 10 10
Caicos -	- 22 00 N 68 10 V	Refolition Ifles	160 10 N	643 20 W
Yhagna	- 22 21 N 72 26 V	The King's Foreland	ALAN N	12 20 28
Yamara	- 22 30 N 73 13 V	Q Ann's Foreland-	-64 12 N	53.00 W
Samana -	- 24 22 N 74 10 V	V Cape Charles	-62 10 N	AR ALL
Yamina		N.end of Mansfield		71 00 1

4. ...

The Use of the Table of Latitude and Longitude of Places.

IN this Table there are Two Columns, the One shewing the Latitude, the Other the Longitude of Places: The Latitudes are distinguished by the Letters N and S, which shew the Latitude of the Place to be either Northerly or Southerly. The Longitudes are accounted either Easterly, or Westerly, from the Meridian of London. In Example or Two will make it plain.

Example 1.

What is the Latitude and Longitude of the Lizard, upon the Coast of England?
Against the Lizard you will find 49° 56' North Latitude, and 05° 23' West Longitude.

Example 2.

What is the Lacitude and Longitude of Bermudas, one of the West-India Islands? Against Barmudas you will find Lat. 32 25' N. Long. 64° 23' W.

To find the difference of Longitude between any Two Places.

Take the Longitudes of the Two Places out of the Tables, and if they have both East, or both West Longitudes, their Difference; but if the one have an East, and the other a West Longitude, their Sum is the Difference of Longitude required.

Example 1.

What is the Difference of Longitude between Bermudas, and Cape Race in New-

The Longitude of Barmudas is ________ 64° 23' W.

of Cape Race is _______ 53° 45' W.

The Remainder is the Difference of Longitude _______ 10° 38'

Example 2.

Here followerb a Table of Meridional Parts.

1	N. 好价	M	od.	1 d.1	2 4.	36	6.60	36	5 6	7 6	8 4 1	0 64	102	18731	PF 35	TO FELLY	循
2 2 6 68 129 189 249 270 360 422 627 525 665 627 789 12 33 3 63 123 183 287 520 566 424 48 48 544 606 167 226 790 3 3 4 4 4 6 164 184 224 236 236 26 42 48 54 606 167 226 790 3 3 4 5 5 65 125 185 185 185 185 185 185 185 185 185 18		0	-	60	120	180	240	300	761	431	2.31	1612	502	KKA			
3			1	SECTION STATES	321		241		362	THE RESERVE ASSESSMENT OF THE PARTY OF THE P	482	543	654	665	725	789 1	88
3		2				162			10387 JMCY JM		483	514	605		707	730 2	
5 6 66 126 186 28, 300 365 427 486 547 608 660 770 752 3 6 7 7 7 67 77 187 187 247 307 368 428 488 547 608 660 770 752 3 6 7 7 7 67 7 187 187 247 307 368 428 489 349 646 671 731 733 73 6 7 8 8 8 68 128 188 28,8 50 359 489 489 349 646 671 731 733 73 6 9 9 69 129 189 249 299 370 490 491 351 642 673 7734 773 773 6 9 10 10 70 70 130 130 140 131 372 441 492 552 613 674 773 7734 77 187 17 17 17 17 17 17 17 19 19 19 19 19 19 19 19 19 19 19 19 19			3	63		163	243			424		SECURIOR SECURIOR SE		COURSE SHIP OF STREET	728	790 3	
6 6 66 126 186 245 305 307 447 488 548 606 670 732 729 57 8 8 8 8 68 128 188 248 308 379 429 420 550 511 670 732 731 729 57 100 10 70 130 130 150 250 310 371 441 449 552 613 673 734 756 9 10 10 70 131 191 241 311 372 441 449 552 613 673 734 779 10 11 71 131 191 241 311 372 441 449 552 613 672 729 11 13 13 73 133 193 253 312 373 473 59 555 616 677 232 789 11 13 13 73 133 193 253 312 373 473 59 555 616 677 232 880 13 14 14 14 74 134 194 552 513 13 373 433 495 555 616 677 238 800 13 15 15 15 75 135 195 255 415 376 436 437 457 458 618 617 248 800 13 15 15 15 75 135 195 255 415 376 436 437 556 617 674 748 803 13 15 15 17 77 137 197 257 31 378 438 459 555 616 677 238 800 13 16 18 78 138 198 253 313 373 438 459 555 616 677 238 800 13 16 18 78 138 198 253 313 373 438 459 555 616 677 238 800 13 16 18 78 138 198 255 313 373 435 456 515 617 674 746 803 16 17 77 71 37 197 257 31 378 438 459 555 617 646 774 803 16 17 77 71 37 197 257 31 378 438 459 559 640 687 743 803 16 17 77 77 137 197 257 31 378 438 459 559 640 687 743 803 16 17 77 77 137 197 257 31 378 438 459 559 640 687 743 803 16 17 77 77 137 197 257 31 378 438 459 559 640 687 743 803 16 10 10 10 79 137 799 259 319 350 440 687 672 673 674 805 19 20 20 80 140 200 260 320 381 444 502 569 621 682 744 805 18 22 22 82 142 200 260 320 381 444 502 569 623 632 648 748 809 12 22 22 82 142 200 260 320 381 444 502 569 630 630 748 809 22 22 82 142 200 260 320 381 444 502 569 630 630 748 749 800 12 20 20 80 140 200 260 320 380 440 500 660 660 672 728 80 140 200 260 322 382 443 400 660 678 749 800 12 20 20 80 140 200 260 320 380 440 500 660 678 749 800 12 20 20 80 140 200 260 320 380 440 500 678 749 800 12 20 20 80 140 200 260 320 380 440 500 678 749 800 12 20 20 20 80 140 200 260 322 382 344 440 500 678 749 800 12 20 20 20 20 20 20 20 20 20 20 20 20 20				04	Market and the second				365	CONTRACTOR NA		PERMIT	JUST HARRY THE			791 4	
7 7 7 6 7 197 197 247 397 368 498 489 549 640 671 732 734 78 67 9 9 69 199 189 249 309 370 490 491 551 642 673 734 776 9 9 10 10 10 50 119 190 250 310 371 421 492 552 611 672 731 777 10 11 11 11 71 131 191 421 311 372 41 42 42 553 644 675 72 72 191 191 421 191 421 191 421 421 431 373 433 493 553 644 675 72 72 191 191 421 191 421 191 421 421 431 373 433 493 553 644 677 238 800 11 14 14 74 134 194 251 311 374 434 492 554 615 477 238 800 11 14 14 74 134 194 251 311 375 475 496 556 647 57 578 240 801 14 14 74 134 194 251 313 373 433 493 553 644 677 238 800 11 15 15 75 135 195 255 455 345 370 430 430 550 647 378 240 801 14 14 74 134 194 251 313 373 433 493 553 646 477 238 800 12 16 16 16 76 136 196 366 316 377 477 498 553 616 877 238 800 14 16 16 76 136 196 366 316 377 477 498 553 616 877 238 240 801 14 15 15 15 15 15 15 15 15 15 15 15 15 15		2	2				MEDICAL COLUMN	306				DESCRIPTION OF THE PERSON NAMED IN COLUMN 1	608				
8 8 68 128 128 128 228 326 350 429 450 550 511 570 733 779 8 10 10 10 50 120 150 250 310 371 421 422 553 613 674 731 775 42 11 11 17 71 131 151 421 311 372 452 483 553 614 675 736 737 177 10 11 11 17 71 131 151 421 311 372 452 483 553 614 675 736 737 11 13 13 151 421 311 372 452 483 553 614 675 736 737 11 13 13 13 13 13 13 13 13 13 13 13 13		CAST TABLE				BACON CO.		STREET, SQUARE,		428		320 ×46.290 1	000	CORPORATION AND ADDRESS.			SE 22
9 9 69 129 139 249 359 370 430 491 551 612 573 724 736 9 110 10 10 19 130 150 250 310 371 431 492 552 613 673 724 736 9 110 11 11 71 131 191 421 311 372 482 489 553 614 675 735 739 11 12 12 72 132 1592 250 312 373 433 594 553 614 675 735 739 11 13 13 73 133 159 251 313 374 433 499 551 616 677 238 800 13 14 14 74 134 154 154 251 314 375 455 456 556 617 678 740 801 14 15 15 75 155 159 159 255 415 376 436 497 557 618 170 470 801 14 16 16 76 136 156 256 316 317 471 488 558 617 678 740 801 14 17 17 77 137 197 257 37 378 438 438 499 559 620 684 743 801 15 18 18 18 18 18 198 258 318 370 433 500 566 621 612 744 801 15 19 10 77 139 159 259 315 360 840 501 661 672 728 801 15 10 10 10 10 10 10 10 10 10 10 10 10 10 1	1378	8	8	68			248		DESCRIPTION AND ADDRESS.	429	CONTRACTOR AND A	SSE COLUMN			735	791 6	5 5
110 10 70 19 19 190 290 210 271 471 472 482 483 573 614 675 775 775 770 11 11 11 77 131 191 281 281 372 483 573 514 675 775 775 775 775 11 13 13 73 133 193 233 313 374 433 492 575 616 677 728 800 13 14 14 14 74 134 194 295 314 377 475 485 586 671 678 740 601 84 15 15 75 135 195 195 255 415 376 436 497 575 618 476 78 740 601 84 15 15 75 135 195 195 255 415 376 436 497 575 618 476 78 740 601 84 15 15 75 135 195 195 255 415 376 436 497 575 618 476 748 740 601 84 15 15 77 137 197 297 3 73 378 438 499 579 618 476 744 802 45 17 17 77 137 197 297 3 73 378 438 499 579 648 474 801 11 18 18 18 18 198 298 318 379 43 500 560 621 632 744 801 11 19 19 79 339 199 259 319 340 840 501 561 632 689 735 803 19 20 20 80 140 200 260 320 381 441 502 559 671 688 748 804 19 20 21 21 81 141 201 261 321 389 442 602 503 803 188 77 83 84 80 80 12 22 22 82 142 202 202 20 32 382 443 602 503 633 88 444 503 664 685 686 748 809 23 23 23 83 143 202 263 323 384 444 503 564 685 686 748 809 23 23 23 23 83 143 202 263 323 384 444 503 564 685 686 748 809 23 23 24 24 84 144 204 264 324 324 384 45 500 566 637 688 736 881 23 24 24 84 144 204 264 324 324 384 45 500 566 637 688 736 881 23 24 24 84 144 204 264 324 324 384 45 500 566 637 688 736 881 23 24 24 84 144 204 264 324 324 384 45 500 566 637 688 736 881 23 24 24 84 144 204 264 324 324 384 45 500 566 637 688 736 881 23 24 24 84 144 204 224 324 323 323 384 445 500 566 637 688 736 881 23 24 24 84 144 204 234 324 384 45 500 566 637 688 736 881 23 25 25 85 145 205 205 205 325 325 335 340 35 570 671 687 738 881 23 24 224 24 84 124 202 202 202 323 383 443 590 500 666 677 788 800 22 32 32 32 32 32 32 32 32 32 32 32 32		0000000	9	69	129	189	249	309				CONTRACTOR OF THE PARTY OF THE	SECRETARION OF THE PARTY OF THE			53-1-3-42 (9/02)	2007 1962
11		Chaption 18	Characteristics	70	130	190	250	310	A STATE OF THE PARTY OF THE PAR	TOTAL COMP	1.	Brand State Could			Wronen-seal 2	707	48
12 12 72 132 79 133 193 233 312 373 433 494 595 515 616 677 238 800 134 14 14 14 14 14 14 14 14 14 14 14 14 14					ADDRESS: A SEC.	191	MATERIAL SCHOOL		372							798 11	6 60 (20
13	100	10000000	12				ORDERSTON AND VALUE OF	INCOME STATE OF	373				BRANCH THE REAL PROPERTY.	176	TOTAL PROPERTY.	200 10	26 3 (328
15 15 77 135 195 295 245 375 376 436 497 575 618 677 741 602 446 166 76 136 195 296 295 377 417 498 555 615 616 677 741 602 446 117 17 77 137 197 257 3 7 378 438 499 559 610 686 742 803 16 17 17 77 137 197 257 3 7 378 438 499 559 610 686 742 803 16 18 18 18 18 18 18 198 298 318 379 439 500 560 621 682 741 801 18 19 19 79 139 199 299 319 380 440 501 561 622 682 741 801 18 19 19 19 79 139 199 299 319 380 440 501 561 622 682 741 801 18 19 12 12 181 141 201 12 12 131 382 442 502 553 623 684 747 809 31 22 22 22 82 1442 202 262 322 383 433 604 561 622 686 748 809 23 23 23 33 143 203 263 333 184 444 502 563 624 685 749 810 23 24 24 24 24 202 262 322 383 443 502 566 627 686 749 810 23 24 24 24 24 24 202 265 353 636 444 502 565 627 686 749 810 23 24 24 24 24 24 202 265 353 636 444 502 565 627 686 749 810 23 24 24 24 24 24 24 262 265 35 325 386 444 502 565 627 686 750 811 24 24 25 25 85 145 205 255 325 386 444 502 565 627 680 759 812 24 25 25 85 145 205 255 325 386 444 502 566 627 680 759 812 24 25 25 85 145 205 265 325 386 386 444 502 566 627 680 759 812 24 24 24 24 24 24 24 24 24 24 24 252 262 565 325 386 386 445 502 566 627 680 759 812 24 25 25 85 145 205 265 325 385 386 445 502 566 627 680 759 812 24 25 25 85 145 205 265 325 385 386 445 502 566 627 680 759 812 24 27 27 87 147 207 267 327 388 448 509 566 630 691 753 814 27 27 29 87 147 207 267 327 388 448 509 566 630 691 753 814 27 207 25 37 38 38 48 509 560 600 752 813 26 29 29 89 149 209 299 329 30 30 90 150 210 270 330 391 451 972 573 633 695 757 816 29 30 30 90 150 210 270 330 391 451 972 573 633 695 757 819 31 31 91 151 211 271 331 392 452 510 577 638 697 758 812 28 29 215 275 235 394 455 510 577 638 699 750 822 34 353 39 455 510 577 638 699 750 822 34 353 39 455 510 577 638 699 750 822 34 353 39 450 450 450 450 450 450 450 450 450 450				73				SCHOOL SECTION AND ADDRESS OF			495	555		677	738	800 17	MICH RES
17 17 77 130 190 250 310 377 437 498 553 616 686 742 803 151 19 19 79 339 199 259 318 370 439 500 500 621 682 741 803 18 19 19 79 339 199 259 318 370 439 500 500 621 682 741 803 18 19 19 79 339 199 259 318 370 439 500 500 621 682 741 803 18 19 19 19 79 339 199 259 310 386 440 501 561 622 68 745 806 19 20 20 80 140 200 266 320 381 441 502 563 623 683 745 805 19 22 22 82 142 202 202 803 143 203 263 323 381 441 502 563 623 683 747 805 21 22 32 383 1443 203 263 323 384 445 505 565 626 677 749 816 23 24 24 84 144 204 264 324 384 445 505 565 626 677 749 816 23 24 25 25 85 184 205 265 253 386 445 507 507 688 685 751 812 23 26 26 86 146 206 26 32 32 383 443 509 62 60 752 813 26 27 27 27 87 147 207 207 327 388 389 495 509 569 630 691 753 814 22 22 28 88 128 208 268 328 389 445 509 569 630 691 753 814 22 22 28 88 128 208 268 328 389 449 509 569 630 691 753 814 27 27 27 27 37 87 147 207 267 327 388 39 449 510 570 611 602 748 815 28 29 29 89 149 209 269 329 330 450 511 571 632 694 755 816 29 33 33 33 33 33 33 34 345 518 355 625 627 750 817 30 31 31 91 51 211 271 331 392 451 513 77 624 605 775 810 31 32 32 32 22 152 212 272 332 333 34 435 518 505 636 647 7758 820 23 33 33 33 33 33 34 353 518 505 564 697 758 820 23 33 33 33 33 34 354 518 518 505 636 647 7758 820 33 33 33 33 34 345 518 518 505 636 647 7758 820 33 33 33 33 34 345 518 518 505 636 697 758 820 33 33 33 33 34 345 518 518 505 636 647 7758 820 33 33 33 34 345 518 518 505 636 647 7758 820 33 33 33 34 344 64 64 65 517 578 629 700 761 623 31 31 91 551 211 271 331 392 4512 513 776 626 698 759 821 33 33 33 34 345 455 513 577 626 698 759 821 33 33 34 354 545 515 575 636 647 7758 820 33 33 33 34 345 445 518 575 77 638 699 700 761 823 34 34 34 94 154 214 274 334 398 455 516 577 636 698 775 819 31 33 34 344 44 44 44 104 166 224 284 344 404 404 64 624 284 384 384 404 405 405 528 586 647 70 766 823 34 444 44 104 166 224 284 344 404 405 405 528 586 647 70 766 820 34 44 44 104 166 224 288 344 404 405 405 528 586 647 70 766 820 34 44 44 104 164 224 284 344 404 405 405 528 586 647						1 110000000			375				\$500 EXC \$600	678	740	801 14	
18 18 78 137 197 259 319 379 389 599 600 661 743 80a 17 19 19 79 139 199 259 319 380 440 501 561 622 68 743 80a 17 20 20 80 140 200 260 320 381 441 502 559 562 621 687 749 803 19 20 21 21 81 141 201 861 321 382 442 503 563 661 667 749 809 21 22 22 82 142 202 262 322 383 443 503 563 661 667 748 809 22 23 23 83 143 203 263 323 384 444 505 565 626 687 748 809 22 24 84 144 204 264 324 385 445 506 566 627 688 750 811 24 25 25 85 144 205 265 325 325 386 445 507 565 626 687 748 816 23 26 26 86 146 206 26 326 327 387 447 508 686 579 507 752 813 26 27 27 87 147 207 267 327 388 448 509 569 630 691 753 814 27 29 29 89 149 209 269 329 330 440 511 571 632 694 755 816 29 30 30 90 150 210 270 330 391 451 312 573 633 695 756 816 29 30 30 30 90 150 210 270 330 391 451 312 573 633 695 756 816 29 30 30 30 90 150 210 270 330 391 451 312 573 633 695 756 816 29 30 30 30 90 150 210 270 330 391 451 512 573 633 695 756 816 29 31 31 31 91 151 211 271 331 332 452 513 574 634 655 777 816 31 32 22 22 152 212 272 332 333 344 54 515 576 636 688 759 681 32 33 33 33 33 33 143 213 273 333 394 454 515 576 636 688 759 682 32 33 33 39 49 159 215 215 277 335 396 456 517 778 639 820 32 33 34 49 4 154 244 274 334 399 455 516 577 628 699 750 822 34 35 36 36 96 156 216 276 336 336 456 517 778 839 700 761 823 33 34 34 94 154 214 274 334 399 455 516 577 628 699 750 822 34 35 36 36 96 156 216 220 288 348 401 451 522 583 644 705 766 822 34 40 40 100 160 220 288 348 401 451 522 583 644 705 766 826 34 41 41 10 161 22 281 843 340 404 464 527 588 649 700 771 823 454 44 44 40 100 160 220 288 348 409 459 520 581 642 703 764 826 32 35 37 79 157 217 277 373 388 458 515 586 647 703 764 826 33 36 38 88 18 82 82 82 83 848 809 83 88 89 858 81 88 82 82 82 83 848 89 858 81 88 82 82 83 848 848 848 848 848 848 848 848 848				76							497	22%	COST L NO. (A)	679		00211	38
18 18 78 138 149 299 299 319 390 439 500 560 621 682 741 839 18 19 20 20 80 140 200 260 320 381 441 502 559 622 68 745 806 19 20 21 21 811 141 201 861 321 382 442 503 563 662 68 748 809 22 22 82 142 202 262 322 383 442 503 563 662 685 747 809 22 23 23 38 31 143 203 263 323 384 444 505 565 666 627 688 68 748 809 22 24 24 24 84 144 204 564 324 365 565 666 627 688 687 749 816 23 24 24 24 84 144 204 564 324 365 386 445 507 567 688 687 754 816 23 265 26 86 146 205 265 325 386 445 507 567 688 687 751 812 28 29 29 89 149 209 269 329 339 447 508 568 629 690 752 813 26 27 27 87 147 207 267 327 388 448 500 569 630 691 753 814 27 29 28 88 148 208 268 328 389 449 510 570 631 662 748 815 28 29 29 89 149 209 269 329 330 450 511 571 632 694 755 816 29 33 33 33 14 51 571 632 694 755 816 29 33 33 33 34 545 513 574 624 605 757 819 31 32 32 32 92 152 212 272 331 332 453 513 574 624 605 757 819 31 32 33 39 34 53 513 574 624 605 757 823 33 33 93 153 213 273 338 334 451 552 5635 607 758 817 30 33 34 494 154 214 274 334 395 455 516 577 638 697 750 821 33 35 35 95 155 275 335 335 36 456 517 578 639 700 761 623 33 33 34 454 515 570 636 607 758 820 32 33 33 93 153 213 273 333 334 453 513 574 624 605 757 819 31 32 32 32 92 152 212 272 332 333 334 453 513 574 624 605 757 819 31 33 33 34 454 444 444 644 644 644 644 644 644 64			ESCALISMAN DISC						378	438				686		804 16	88
19 19 79 139 199 299 259 319 380 440 501 551 622 683 745 805 19 20 20 80 140 200 265 320 381 441 502 556 563 623 684 748 809 22 21 21 81 141 201 261 321 382 442 502 556 563 623 685 748 809 22 22 82 142 202 262 322 383 443 504 564 665 686 748 809 22 23 23 83 143 203 263 323 384 444 505 565 664 686 748 809 22 24 24 84 144 204 224 324 385 445 505 566 622 686 7749 816 82 25 25 85 145 205 265 325 386 446 507 507 567 638 689 775 842 25 26 26 86 146 206 26 326 387 447 508 568 629 690 775 883 26 27 27 87 147 207 267 327 388 448 509 569 630 691 733 884 27 29 88 148 208 268 328 389 349 510 570 631 692 734 815 28 29 29 89 149 209 269 329 330 450 511 571 632 694 755 816 29 30 30 90 150 210 270 330 391 451 512 577 633 695 756 816 29 30 30 90 150 210 270 330 391 451 512 577 633 695 756 817 30 31 31 91 151 211 271 331 392 452 513 574 634 695 775 816 31 32 32 92 152 212 272 332 333 394 454 515 570 636 694 755 816 29 33 33 92 153 213 273 333 394 454 515 570 636 694 755 816 29 33 33 92 153 213 273 333 394 454 515 570 636 698 799 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 768 820 32 33 33 92 153 213 273 333 394 454 515 570 636 698 799 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 768 822 34 37 37 37 97 157 217 277 373 398 458 515 586 644 702 703 825 37 36 36 96 156 216 276 336 397 457 518 579 640 700 701 823 37 36 36 96 156 216 276 336 397 457 518 579 640 700 761 823 37 36 36 96 156 216 276 336 397 457 518 579 640 700 761 823 37 36 36 96 156 216 276 336 397 457 518 579 640 700 770 82 34 44 44 104 164 224 284 344 404 461 525 526 587 648 709 769 831 44 44 104 164 224 284 344 407 467 527 538 649 707 769 831 53 50 50 110 170 230 290 380 340 467 530 590 651 712 773 835 47 48 48 108 168 228 228 334 409 469 530 590 651 712 773 834 46 47 47 107 167 227 287 347 408 468 529 590 651 717 778 834 45 48 48 108 168 228 238 348 409 469 530 590 651 717 778 834 45 49 49 109 169 229 285 334 409 469 530 590 651 717 778 834 45 50 50 110 170 230 290 350 411 471 532 599 650 711 779 834 55 50 50 110 170 230 290 350 411 471 532 599		18	18	78	138	198	258	318			WEST VALUE OF THE PARTY OF THE		GROUND STORY	OCCUPATION OF THE PARTY.		854 18	
21	33	19	19			199	259	319	380	440		561		695	745	806 10	통령
21 21 81 141 201 201 321 382 442 503 563 624 685 748 809 22 32 383 143 203 263 323 384 444 505 565 626 685 748 809 22 32 42 42 48 41 144 204 254 324 385 444 505 565 626 685 749 886 23 25 85 145 205 255 355 386 444 505 565 626 685 750 681 24 25 25 85 145 205 255 355 386 444 505 565 626 685 750 881 24 25 25 85 145 205 255 325 386 444 505 565 628 685 750 881 24 25 25 85 145 205 255 325 386 445 507 567 628 685 751 812 25 25 85 145 205 255 325 386 445 507 567 628 685 751 812 25 25 85 145 205 205 325 325 386 445 509 569 630 691 753 814 27 27 27 37 327 388 448 509 569 630 691 753 814 27 28 28 88 148 208 268 328 389 449 510 570 631 692 754 815 28 29 29 89 149 209 269 329 300 450 511 571 532 694 755 816 29 30 30 90 150 210 270 330 391 451 571 572 573 633 695 756 817 30 31 31 91 151 211 271 331 392 452 573 633 695 756 817 30 31 31 91 151 211 271 331 392 452 573 633 697 758 820 32 33 33 33 33 33 33 34 94 154 274 334 395 455 516 577 636 698 779 821 33 34 94 154 214 274 334 395 455 516 577 636 699 750 822 34 35 35 95 155 215 275 335 396 456 517 578 639 700 761 823 33 37 37 97 157 217 277 337 398 458 519 586 641 702 763 823 33 39 99 199 219 279 339 400 460 521 882 643 703 766 822 34 44 44 104 164 224 284 334 399 459 520 581 642 702 763 825 33 44 44 104 164 224 284 344 405 465 527 588 644 705 766 828 44 44 44 104 164 224 284 344 405 465 527 588 644 705 766 828 44 44 44 104 164 224 284 344 405 465 527 588 644 705 766 828 44 44 44 104 164 122 228 234 240 463 524 585 647 707 768 826 38 44 44 44 104 164 122 228 234 240 463 524 585 647 707 768 826 38 44 44 44 104 164 122 228 234 344 405 465 527 588 644 705 766 828 44 44 44 104 164 122 228 234 344 405 465 527 588 649 700 770 833 44 55 55 55 115 172 232 292 385 344 407 467 538 599 665 711 772 834 45 45 45 105 165 225 285 344 407 467 538 599 665 711 772 834 45 55 55 51 115 172 232 292 352 443 443 473 534 595 665 716 777 788 33 445 65 55 55 115 172 232 292 352 443 473 534 595 666 717 778 833 445 65 55 55 115 177 235 295 355 446 467 537 598 699 700 708 834 45 55 55 55 115 172 235 295 3	38	20	20		140	200	260	320	384	441	502	352	622	684	746	807 20	養養
22 22 82 82 142 202 862 322 883 443 504 564 655 686 748 809 22 23 83 143 203 263 332 384 444 506 566 626 686 749 811 24 255 255 255 85 145 205 265 325 386 446 507 567 628 686 751 812 25 26 26 86 146 206 26 326 387 447 508 568 629 690 752 883 26 26 86 146 206 26 326 387 447 508 568 629 690 752 883 26 27 27 87 147 207 267 327 388 448 509 569 630 691 753 814 27 29 29 89 149 209 229 329 329 300 450 511 571 632 694 755 816 29 30 30 90 150 210 270 330 391 451 572 573 633 692 754 815 28 28 29 29 89 149 209 229 329 329 452 513 574 624 695 756 8817 30 31 31 91 151 211 271 331 392 452 573 633 695 756 8817 30 31 32 92 152 212 272 332 333 334 454 515 570 636 698 759 882 33 33 33 23 153 213 273 333 394 454 515 570 636 698 759 882 33 33 33 93 153 213 273 333 394 454 515 570 636 698 759 882 33 33 34 34 34 94 154 214 274 334 395 455 516 577 628 699 750 821 33 35 35 35 95 155 215 275 335 396 456 517 578 639 760 822 34 35 35 35 35 95 155 215 275 335 396 456 517 578 639 760 822 34 35 37 37 97 157 217 277 337 398 458 519 580 641 702 763 824 33 39 39 99 159 219 279 339 400 460 521 582 647 703 764 826 33 39 39 99 159 219 279 339 400 460 521 582 647 703 766 828 33 39 39 99 159 219 279 339 400 460 521 582 647 703 766 828 33 39 39 99 159 219 279 339 400 400 100 160 220 280 340 401 401 401 101 161 221 281 341 402 462 523 584 645 705 766 828 40 47 47 107 167 227 287 347 398 458 519 580 641 702 763 824 40 40 40 100 160 220 280 340 401 401 401 501 622 222 282 342 401 463 522 583 644 705 766 828 40 40 40 100 160 220 280 340 401 401 401 501 602 220 280 340 401 401 401 701 701 701 221 281 341 341 402 462 523 584 645 705 766 828 40 40 40 100 160 220 280 340 401 401 401 701 701 701 701 701 701 701 701 701 7		21	21		SECURITOR ACCUSES	EUG 4199400000		DESCRIPTION OF THE PARTY OF THE	382	442	OTTO CARROTTO		621		747		
24			SECTION STREET, SPECIAL PROPERTY.								404	SHEET SHEET OF T			748	809 22	£ 6
26 26 86 146 206 26 325 325 387 447 500 508 689 650 752 813 26 27 27 87 147 207 267 327 388 448 500 569 630 691 753 814 27 28 28 88 148 208 268 328 389 449 510 570 631 692 754 815 28 29 29 89 149 209 269 329 390 450 511 571 632 664 755 816 29 30 30 90 150 210 270 330 391 451 571 633 695 756 817 30 31 31 91 151 211 271 334 392 452 513 574 634 695 757 819 31 32 32 92 152 212 272 332 333 345 514 575 635 669 7758 820 32 333 33 93 153 243 273 333 34 454 515 576 636 668 739 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 760 822 34 355 35 95 155 215 275 335 396 456 517 578 639 700 761 823 34 39 39 99 159 219 279 337 398 458 519 580 641 702 763 824 36 37 37 97 157 217 277 337 398 458 519 580 641 702 763 825 37 38 38 98 158 218 278 338 389 459 520 581 642 703 764 822 38 39 39 99 159 219 279 239 390 450 521 582 644 705 766 828 34 44 44 104 164 224 284 344 402 462 522 282 342 403 463 524 585 644 705 766 828 44 44 44 104 164 224 284 344 405 465 525 586 647 705 766 828 44 44 44 104 164 224 284 344 405 465 525 586 647 705 766 828 44 44 44 104 164 224 284 344 405 465 525 586 647 705 766 828 44 44 44 104 164 224 284 344 405 465 525 586 647 705 766 828 44 44 44 104 164 224 284 344 405 465 525 586 647 705 766 828 44 454 454 105 165 225 285 345 406 466 527 588 649 700 776 830 42 44 47 107 167 227 287 347 408 468 529 590 651 712 773 835 475 50 50 50 110 170 230 290 350 410 470 531 592 653 714 775 837 49 50 50 50 110 170 230 290 350 411 471 532 598 656 711 772 834 48 49 109 169 169 229 285 345 406 466 527 588 649 710 771 833 456 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 475 50 50 50 110 170 230 290 350 411 471 532 598 656 711 772 834 48 50 50 50 110 170 230 290 350 411 471 532 598 656 711 772 834 48 50 50 50 110 170 230 290 350 411 471 532 598 656 711 772 834 48 50 50 50 110 170 230 290 350 411 471 532 599 656 711 778 835 475 50 50 50 110 170 230 290 350 411 471 532 599 656 711 778 835 475 50 50 50 110 170 230 290 350 411 471 532 599 656 711 777 83 448 555 555 511 111 171 231 291 351 412 472 533 599 656 711												ARCHITICAL PROPERTY AND A	(5000) 4 00000	687	749	810 23	
26 26 86 146 206 26 32 326 387 447 508 568 629 690 752 8t3 26 27 27 87 147 207 267 327 388 448 509 568 630 691 753 8t4 27 28 28 88 148 208 268 328 389 449 510 570 631 692 754 8t5 28 29 29 89 149 209 269 329 390 450 510 570 631 692 754 8t5 28 29 30 30 90 150 210 270 330 391 451 752 573 633 695 756 8t7 30 31 31 91 151 211 271 331 392 452 513 574 634 695 757 819 31 32 32 92 152 212 272 332 332 333 453 514 575 636 669 757 820 32 33 33 93 153 213 273 333 394 454 515 576 636 669 759 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 760 822 34 353 535 356 155 215 275 335 396 456 517 578 639 700 761 823 33 36 96 156 216 276 336 397 457 518 579 640 701 762 824 36 37 38 38 98 158 218 278 338 399 459 520 581 642 700 764 825 37 38 38 98 158 218 278 338 399 459 520 581 642 700 764 826 38 39 39 99 159 249 279 339 460 460 521 582 643 700 766 828 40 41 41 101 161 221 281 341 402 462 522 282 384 344 404 104 164 224 284 384 344 405 465 527 582 643 700 766 828 40 41 41 101 161 221 281 341 402 462 522 282 383 343 404 464 525 586 647 705 766 828 40 41 41 101 161 221 281 341 402 462 522 583 644 705 766 828 40 41 44 104 164 224 284 344 409 404 565 525 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 588 649 710 771 833 454 454 451 103 165 225 285 345 406 466 527 788 869 770 788 838 49 49 109 169 229 289 349 440 470 531 592 653 714 775 837 49 550 550 110 170 230 290 350 441 471 533 596 650 711 772 834 49 49 109 169 229 289 349 440 470 531 592 653 714 775 838 49 550 550 110 170 230 290 350 441 471 533 599 655 711 772 834 49 550 550 110 170 230 290 350 440 470 531 592 653 714 775 838 49 555 555 115 175 235 295 355 440 477 538 599 665 711 778 833 49 555 555 110 170 230 290 350 440 47			STATE OF THE PARTY	85	\$5000 Section 2.40	CONTRACTOR AND ADDRESS OF THE PARTY OF THE P		BECKLAMOUNG:	305		1000-2002Bc2 (THE CHARLES THE PERSON NAMED IN	ORGANIZATION AND I	686		THE PERSON NAMED IN	
27 27 87 147 207 267 327 388 448 509 569 630 691 753 814 27 28 88 148 208 268 328 389 449 510 570 631 692 744 815 28 29 29 89 149 209 269 329 390 450 511 571 632 694 755 816 29 30 30 90 150 210 270 330 391 451 572 573 633 695 756 817 30 31 31 91 151 211 271 334 392 452 513 574 634 695 757 819 31 32 32 32 32 32 323 333 374 454 575 635 635 697 758 820 32 32 333 33 93 153 213 273 333 394 454 515 570 636 698 759 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 750 822 34 355 35 95 155 215 275 335 386 456 517 578 639 700 764 823 35 36 96 156 216 276 336 387 457 518 579 640 791 765 822 34 37 38 38 38 98 158 218 278 33 838 399 459 520 516 642 703 766 822 38 39 39 99 159 219 279 339 400 40 100 160 220 280 340 401 451 522 582 643 703 766 824 38 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 584 645 707 766 838 40 41 41 101 161 221 281 341 402 462 523 586 644 705 766 838 40 41 41 101 161 221 281 341 402 462 523 586 644 705 766 838 40 41 41 101 161 221 281 341 402 462 523 586 644 705 766 838 40 41 41 101 161 221 281 341 402 462 523 586 644 705 766 838 40 41 41 101 161 221 281 341 402 462 523 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 770 922 44 45 45 105 105 225 285 349 406 466 527 588 649 710 771 833 45 45 45 45 45 45 45 45 45 45 45 45 45				86	erecessors and	60000 STR - 53		1006-1006-10					620			SERVICE SHARE STATE.	26
28		10000000	27	87	147	207		0000 accompany	388	448	DOMESTIC STREET	RESELVED VEHICLE				O THE RESERVE	68 SB
29	100	23	28				268				TOTAL PROPERTY.	(050)-a(0025-aa6) (CONTRACTOR OF THE PARTY.		815 28	88
30 30 90 150 210 270 330 391 451 592 573 633 695 756 817 30 311 31 9f 151 211 271 331 392 452 513 574 534 695 757 819 31 32 32 92 152 212 272 332 323 333 574 554 518 695 757 88 20 31 33 33 93 153 213 273 333 394 454 515 576 636 668 759 621 33 34 34 94 154 214 274 334 395 455 516 577 638 699 760 822 34 353 35 95 155 215 275 335 396 456 517 578 639 700 761 823 35 36 36 96 156 216 276 336 397 457 518 579 640 701 763 824 36 37 37 97 157 217 277 337 398 458 519 580 641 702 763 824 36 37 37 97 157 217 277 337 398 458 519 580 641 702 763 824 36 39 39 99 159 219 279 339 400 400 501 160 220 280 340 401 451 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 402 402 102 162 222 282 342 401 453 524 585 646 707 768 820 42 43 44 44 104 164 224 284 344 405 465 527 588 647 705 769 831 43 44 44 104 164 224 284 384 344 405 465 525 588 647 705 769 831 43 44 44 104 164 224 284 384 344 405 465 527 588 649 707 768 820 442 45 103 165 225 285 345 406 405 527 588 649 707 768 820 442 45 105 165 225 285 345 406 456 527 588 649 700 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 70 92 44 45 45 105 165 225 285 345 406 407 457 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 17 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 81 88 168 228 288 348 409 409 309 359 1652 713 774 813 45 49 49 109 169 229 289 350 411 471 532 593 654 715 776 838 50 50 50 50 50 50 50 50 50 50 50 50 50	*	29	29	89	149	209	269	329	390	450	511	571				CONTRACTOR DESCRIPTION	* *
31 31 91 151 211 271 331 392 452 513 574 634 695 757 819 31 32 32 32 33 33 93 153 213 273 333 332 453 514 575 635 697 758 820 32 33 33 93 153 213 273 333 394 454 515 576 636 698 759 821 33 34 34 94 154 214 274 334 395 455 516 577 638 699 750 822 34 35 35 95 155 215 275 335 396 456 517 578 639 700 761 823 35 35 95 155 215 275 335 396 456 517 578 639 700 761 823 35 35 35 95 155 215 276 336 397 457 518 579 640 701 762 824 36 37 37 37 97 157 217 277 337 398 458 519 580 641 702 763 824 36 39 39 99 159 219 279 339 460 460 521 582 643 701 762 824 36 38 39 39 99 159 219 279 339 460 460 521 582 643 701 765 827 39 40 40 100 160 220 980 340 401 451 522 583 644 705 766 828 41 42 42 102 162 222 282 342 401 452 523 584 645 705 766 828 41 42 42 102 162 222 282 342 401 452 523 584 645 705 766 828 41 42 42 102 162 222 282 342 401 452 523 584 645 705 766 828 41 44 101 161 211 281 341 402 464 525 586 647 707 766 824 44 44 101 164 224 284 344 405 455 526 587 648 709 770 822 44 45 45 105 116 221 281 345 406 466 527 588 649 710 771 823 45 46 46 106 166 220 286 346 407 457 528 586 647 707 708 921 43 44 44 104 164 224 284 344 405 455 526 587 648 709 770 822 44 45 45 105 116 222 288 342 400 459 520 580 591 652 711 772 834 46 45 45 105 116 222 288 345 406 407 457 528 586 647 709 769 831 43 45 45 105 116 222 288 345 406 407 457 528 586 649 710 771 823 45 45 45 105 116 222 286 346 407 457 528 586 649 710 771 823 45 46 46 106 106 220 286 346 407 457 528 589 500 651 711 772 834 46 45 45 105 116 222 289 349 410 470 531 592 653 714 775 837 49 50 50 50 110 170 220 220 280 340 410 470 531 592 653 714 775 837 49 50 50 50 110 170 220 220 280 340 410 470 531 592 653 714 775 837 49 50 50 50 110 170 230 230 280 350 411 471 532 599 654 712 778 836 48 50 50 50 50 50 50 50 50 50 50 50 50 50		30	30	90		2012/00/00/00/00	270		391-	451	And and a second	573	the same of the last				
33 33 93 153 213 273 333 374 454 515 776 636 608 759 821 33 34 454 315 576 636 608 759 821 33 34 34 34 94 154 214 274 334 395 455 516 577 638 699 750 822 34 355 35 95 155 215 275 335 396 456 517 878 659 700 761 823 35 36 36 96 156 216 276 336 397 457 518 579 640 701 762 824 36 37 37 97 157 217 277 337 398 458 519 580 641 702 763 825 37 38 38 98 158 218 278 338 399 459 520 581 642 703 764 826 38 39 39 99 159 219 279 339 400 460 521 582 643 704 765 627 39 40 40 100 160 220 280 340 401 451 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 829 41 42 42 102 162 222 282 342 403 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 44 104 164 224 284 344 405 465 526 587 648 709 770 822 44 45 45 105 165 225 285 345 406 466 527 588 649 710 771 833 45 45 45 105 165 225 286 346 407 467 528 589 650 711 772 834 46 46 106 106 126 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 834 46 49 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 151 111 171 231 291 351 412 472 533 594 655 716 777 83 845 51 111 171 231 291 351 412 472 533 596 657 718 779 84 54 54 114 174 234 294 354 415 475 536 597 658 719 789 842 54 55 55 115 175 235 295 355 416 476 777 58 879 660 721 788 884 55 55 115 175 235 295 355 416 476 777 588 599 660 721 788 843 55 56 56 116 176 235 295 355 416 476 777 588 599 660 721 788 843 55 56 56 116 176 235 295 355 416 476 777 588 599 660 721 788 843 55 56 58 118 178 238 298 358 449 479 540 601 662 723 785 845 57 588 58 118 178 238 298 358 449 479 540 601 662 723 785 845 57 588 58 118 178 238 298 358 449 479 540 601 662 723 785 845 57 588 58 118 178 238 299 358 449 479 540 601 662 723 785 845 57			31	\$1000 COM-00000		(gr) 4222 (S200) 45					513		634		757	819 31	喜 麗
34 34 94 154 214 274 334 395 455 516 577 638 699 760 822 34 35 35 36 36 96 156 216 276 336 397 457 518 579 640 701 763 823 35 35 37 37 37 37 37 37 37 3						22040200000000					OF REAL PROPERTY.		635		RECEIPTING SCHOOL	DESCRIPTION OF THE PERSON	MC 200
35 35 95 155 215 275 335 396 436 517 578 639 700 761 823 35 36 36 96 156 216 276 336 397 457 518 579 640 701 762 824 36 37 37 37 97 157 217 277 337 398 458 519 580 641 702 763 825 37 38 38 98 158 218 278 338 399 459 520 581 642 703 764 826 38 39 400 40 100 160 220 280 340 401 461 522 583 644 705 766 828 40 40 40 100 160 220 280 340 401 461 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 828 40 42 42 102 162 222 282 342 403 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 703 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 700 822 44 45 45 105 165 225 285 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 388 409 469 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 50 50 110 170 230 290 350 411 471 532 595 656 771 778 837 49 50 50 50 110 170 230 290 350 411 471 532 595 656 771 778 837 49 50 50 50 110 170 230 290 350 411 471 532 595 656 771 778 837 49 50 50 50 110 170 230 290 350 411 471 532 595 656 771 778 837 49 50 50 50 110 170 230 290 350 411 471 532 595 666 771 778 837 49 50 50 50 110 170 230 290 350 411 471 532 596 657 718 779 837 849 50 50 50 50 50 50 50 50 50		33	33			\$1000000000000000000000000000000000000		TELESCO-CO-CO-CO-CO-CO-CO-CO-CO-CO-CO-CO-CO-C			DUST COME AN	570	030	MCC - LA SELECT		DIVO STATE BOOK	
36 36 96 156 216 276 336 397 457 518 579 640 701 762 824 36 37 37 97 157 217 277 337 398 458 519 580 641 702 763 825 37 38 38 98 158 218 278 338 399 459 520 581 642 703 764 826 38 399 39 99 159 219 279 339 400 460 521 582 643 704 765 827 39 40 40 100 160 220 280 340 401 401 401 525 583 644 705 766 828 40 42 42 102 162 222 282 342 403 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 703 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 770 82 44 45 45 105 165 225 285 345 406 466 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 46 106 166 226 286 346 409 469 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 64 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 50 50 50 50 50 50 50 50 50	410		35			CONTRACTOR AND ADDRESS OF					100-00000	578		TOTAL CO.		DOT 200000 00 00	160 O
39 39 99 159 219 279 339 400 460 521 582 643 704 765 827 39 40 40 100 160 220 280 340 401 461 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 828 41 42 42 102 162 222 282 342 401 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709		36	36			216	276			457	518	579	640	DESCRIPTION.		824 26	
39 39 99 159 219 279 339 400 460 521 582 643 704 765 827 39 40 40 100 160 220 280 340 401 461 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 828 41 42 42 102 162 222 282 342 401 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709		37	37	97	157	CONTRACTOR OF	277	337					641	CONTRACT SECTIONS		825 37	88
40 40 100 160 220 280 340 401 461 522 583 644 705 766 828 40 41 41 101 161 221 281 341 402 462 523 584 645 705 766 829 41 42 42 102 162 222 282 342 403 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 525 586 647 708 769 831 43 44 45 105 105 165 225 285 345 406 466 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 409 409 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 50 50 50 50 50 50 50 50 50 50 50 50 50				MINISTREE COLUMN									642		764	Michigan and the last	
41 41 101 161 221 281 841 402 462 523 584 645 705 767 829 41 42 42 102 162 222 282 342 403 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 164 164 224 284 344 405 465 526 587 648 709 770 632 44 45 45 105 165 225 285 345 406 406 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 40 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 409 409 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 591 51 111 171 231 291 351 412 472 533 594 655 716 777 830 591 53 53 113 173 233 293 353 414 474 535 596 657 718 779 61 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 599 660 721 783 814 56 57 58 118 178 238 296 356 417 477 538 599 660 721 783 814 56 58 58 118 178 238 296 356 417 477 538 599 660 721 783 814 56 58 58 118 178 238 296 356 417 477 538 599 660 721 783 814 56 58 58 118 178 238 288 388 419 479 540 601 662 723 785 846 58		39	Management (1)	Same and	The second of the second	Shannan S		Sauterions			521	-	-	704	765	Mary Mary 1997 (Co.)	88
42 42 102 162 222 282 342 401 463 524 585 646 707 768 830 42 43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 770 632 44 45 45 105 165 225 285 345 406 466 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 609 469 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 60 651 51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 60 60 60 60 771 778 831 51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 60 60 60 60 771 778 831 51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 60 771 778 831 814 60 60 60 60 60 60 60 60 60 60 60 60 60			A MINISTRACTOR	8.35500000cc	0.0000000000000000000000000000000000000	000000000000000000000000000000000000000			\$5000 March 197000	451	YOURS CONSTRUCT		644	705	766	828 40	
43 43 103 163 223 283 343 404 464 525 586 647 708 769 831 43 44 44 104 164 224 284 344 405 465 526 587 648 709 770 632 44 45 45 105 165 225 285 345 406 466 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 409 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 52 52 112 172 232 292 352 413 473 534 595 656 717 778 53 53 113 173 233 293 353 414 474 535 596 657 718 779 84 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58		41	I DESTRUCTION	\$50.50 PERSON	1,500,000,000	\$3077993000		341	100305-0000025			504	645		767		
44 44 104 164 224 284 344 405 465 526 587 648 709 770 32 44 45 45 105 165 225 285 345 406 466 527 588 649 710 771 833 45 46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 409 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 836 53 53 113 173 233 293 353 414 474 535 596 657 718 779 64 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 36 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58		42		EMPLY STATES	1007/00/2020/2010 CT	NO CARDON STATE			E0020000000000000000000000000000000000			505	1000	DESCRIPTION OF THE			36
45 45 105 105 225 205 345 406 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 469 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 50 51 51 111 171 231 291 351 412 472 533 594 655 716 777 839 52 52 112 172 232 292 352 413 473 534 595 656 717 778 836 50 53 53 113 173 233 293 353 414 474 535 596 657 718 779 83 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 722 784 845 57		44		104	Designation of the	200000000000000000000000000000000000000	284	344	COMPANIES AND REAL AREA	SERVICE ASSESSMENT OF	526	587	648		770	832 4	
46 46 106 166 226 286 346 407 467 528 589 650 711 772 834 46 47 47 107 167 227 287 347 408 468 529 590 651 712 773 835 47 48 48 108 168 228 288 348 409 409 530 591 652 713 774 836 48 49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 838 60 51 51 113 173 233 293 353 414 474 535 596 657 718 779 84 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 36 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 118 178 238 298 358 419 479 540 601 662 723 785 846 38	1	45		105	165	MULTICODE NO.	285	345		466		588			771		
47 47 107 107 107 227 289 347 408 408 529 590 651 712 773 835 472 48 48 108 168 229 289 349 410 470 531 592 653 714 775 837 49 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 839 52 52 112 172 232 292 352 413 473 534 595 656 717 778 839 53 53 53 113 173 233 293 353 414 474 535 596 657 718 779 53 53 53 113 173 233 293 353 414 474 535 596 657 718 779 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58		46		(Sec. 4035-05	C CHARLEST CONTROL	Mark Control	286	346				589		STREET,		834 46	8 2
49 49 109 169 229 289 349 410 470 531 592 653 714 775 837 49 50 50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 839 52 52 112 172 232 292 352 413 473 534 595 656 717 778 839 53 53 53 113 173 233 293 353 414 474 535 596 657 718 779 53 53 53 113 173 233 293 353 414 474 535 596 657 718 779 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 235 296 356 417 477 538 599 660 721 783 814 56 57 57 177 177 237 297 357 418 478 539 600 661 722 784 845 57 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58	3	47			167		287	347	(0.00) 402(0.00)			590	SECURITY SECURITY	Mark Control of		835 47	歸
50 50 110 170 230 290 350 411 471 532 593 654 715 776 838 60 51 51 111 171 231 291 351 412 472 533 594 655 716 777 838 60 52 52 112 172 232 292 352 413 473 534 595 656 717 778 84 53 53 113 173 233 293 353 414 474 535 596 657 718 779 84 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782					160	10.000		340								836 48	
51 51 111 171 231 291 351 412 472 533 594 655 716 777 830 655 55 113 173 233 293 353 414 474 535 596 656 717 778 779 54 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 36 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 38			Married Street, or other party of the last	The second second	A CONTRACTOR OF THE PARTY OF TH	Bustoneroul		Marananer !	-			592	Ten conductors Will	714		837 45	56
52 52 112 172 232 292 352 413 473 534 595 656 717 778 778 53 53 113 173 233 293 353 414 474 535 596 657 718 779 64 53 54 54 114 174 234 294 354 415 475 536 597 658 719 780 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 36 116 176 235 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 38			100000000000000000000000000000000000000	00010000000000								EURODOS AUGUSTOS		715	776	838 50	
53 53 113 173 233 293 353 414 474 535 596 657 718 779 61 53 54 54 114 174 234 294 354 415 475 536 597 658 719 785 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 56 116 176 236 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58	100			100 (april 100 (april 100 april 100			0.0000000000000000000000000000000000000		0.0000000000000000000000000000000000000						777	130 14	
54 54 114 174 234 294 354 415 475 536 597 658 719 785 842 54 55 55 115 175 235 295 355 416 476 537 598 659 720 782 843 55 56 36 116 176 236 296 356 417 477 538 599 660 721 783 814 36 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58	100			BENGS (2007)					ESSENCE TO 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					717	778		1
56 56 116 176 235 296 356 417 477 538 599 660 721 783 814 56 57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58	N L	54	54	0.000 CO					CONTRACTOR OF THE		536	\$200mm to \$100000	668		782	849	
57 57 117 177 237 297 357 418 478 539 600 661 722 784 845 57 58 58 118 178 238 298 358 419 479 540 601 662 723 785 846 58	33	55			175	235			SECURIOR STATE OF				640		782	842 8	
58 58 118 178 238 298 358 419 479 540 601 662 723 784 845 57	1	56	36			235		356	417	477				0.0000000000000000000000000000000000000	783	814 36	
59 . 59 119 179 239 299 359 420 450 541 602 663 724 786 847 50	1	138	57		177		297	357	15500000000	478	539	600	GATES PRODUCED IN	722	784	845 5	
12 21 771 -17 -271 -271 329 4201 400 541 co21 0031 724 786 847 [co]	250	100					200			479	\$165.00 TO \$15.00	THE RESERVE OF THE PARTY OF THE			785	846 38	
		-	2	1	1	-37		1 223	420	470	541	E02	003	724	786	847 5	H

.

温岩	134	66	174	100		204	ard.	321	a 34.	3484	asd.	86d. 1616	274	
E 889	912 913	974 975 976	36 37 38	59 1100 01	93	26 27 98	90 91 92	55 56 57 58	20 21 21 22	85 86 87 88	51 53	17	85 86 87 88	0+2345610010
9 954 6 855 7 856 8 857	914 916 917	977 978 979 985	39 40 41	02 03 04 D5	66 67 68	99 30 32 34 31 1236	93 94	59	22 23 24 25 26	88 89 91 92	54 55 57 58	21 22 23	2 8g	456
9 858	920	981 982	42 44 45	97 98	69 70 71 1172 73 74	34 35	96 97 98 99	61 62 63	25 27 28	93	59	24 25 26	91	78 9
11 860 12 861	921 922 923 924	983 984 985	1046 47 48	1109 10	1172 73 74	1236 37 38	1300 01 02	65 67 68	1429 30 31	94 1495 99	62 63	1728 29	94 1695 96	10
13 862 14 864 15 864 16 866	925	985 986 987 988 989	49 50 5L	12 13 14	75 76 77	59 40 41	03 04 05	69	33	97 98 99 1500	65	31 32	98 199 1700	14
16 856	926 927 928 929	199	52 53 54	16 17 18	77 78 79 80 81	42	05 06 07 08	70 71 72 73 74	35 36 37 38 39 1440	01 03 04	68	33 34 35 36	01 03 04 05	16
95 86 95 87	929 930 931 982	993 994 996	55 1056 57 58	1119	1183	43 44 45 1246 47 48	1311	1375	413	04 05 1506 07	71 1572 73	36 38 1639 40	1706	19 20 21
	933 934 935	997	59	21 22 23	85 86 87	50	13 14 15	77 78 79 81 82	42 44 45 46	07 08 09 10 11	74 75 76	41 42 43	07 08 09 10	21 22 23 24 25 26
36 37 37 37 37 37	937 938	999 Icob Ido	62 63	24 25 27 28	89 90	53 54	15, 17 18	8 ₂ 8 ₃ 8 ₄	47	LA	78 79 80	44 45 46 48	13 14 15	25 26 27 28
29 87 30 87 30 88	940	1003	1057	1130	91 y2 1193 94 9	53 54 55 56 1857 58 59 61	17 18 19 10 1321 22	1386	49 50 1411 52	15 16 1717 18	81 82 1583 84	49 1650 51	16 1717 18	29 30 31 32
31 88 32 88 33 88	942 944 945 945	05 05 07 08 09	68 19 270 71	31 32 33	94 95	59	22 2; 25 26	87 88 89	53 54	20	85	53	21	31 32 33
34 88 34 88 36 88 36 88 37 88 37 88 37 88	947 948 7 949	09 10	72	31 32 33 44 35 37 38	95 97 98 1200	63	27 28 29	90 91 92 94	56 57 58	21 22 23 25	87 89 90	54 55 57 58	23 24	33 34 36 38
STATE OF STATE OF STREET	681 BELALASS	13 1614	73 74 75 76 1077 78 79 80	38 39 1140	01 02 03	64 65 67 1268	30 31 1332	95 96 1397 58	59 60 61	25 16 27 7 5 28	92 93	59 60 1161	25 26 27 1728	38 39 40
47 69	954 2 954	96	78 79 80	41 42 43	1204 05 06 07			58 99 1400	63 64 65	27 1528 29 30 31	95 96 97	63	30 31 32	41 42 42
45 45 45 89 46 89 89	955 4 956 5 957 6 958	18 20 21	81 82 83 81	44 46	08 09	70 71 72 73 74 75 75 77	35 36 37 36 37 40 41	01 02 03	65 68 69 70	32	1000	65 67 68	33	34
45 89 45 89 45 89 49 89	900	20 21 22 23 24	85 87	47 48 49 50 1151	11	75 75 77	42	97	71	37	93 94	69	36 37	45 46 47 48 49
50 00 00	962 963 964	1025 26 27	1038	JJ 51 52 53	08 09 10 11 12 13 1214 15 16	1278 - 79 81	1303 144 146	1408	1473	1539	1605 06 07	70 71 1672 73	39 1740 41 42	50 51 52
7.2	9 5 966 967 968 7 969 8 971	28 29 30	90 91 92 93	3. 54	18 19 20	83 84	46 47 48	12	77	43	10	77 78	43 44 45	53
37 9 38 90		33	94 95 56	55 56 57 58 59	21 22 23	85 86 87 88	49 50 1 51	14 15 16	81 82	47	13 14	79 80 81	47 48 49	55 56. 57 58
1501 90	9 972	34	27	60	L 24	88	52	1 17	83	13:49	15	1 82	50	159

1	M	284		201	2.4	Sodi	nozik		10/1	1877		x () }			LESS OF	-	100
			1819	200		3	2000	3150	27	2000	374	304	1354	404.	\$1d.		
2	0	1751	20	89	59	29	2101	2171	2244	EXECUTE OF	1222	2468	2545	2623	2702	0	
	2	53	22	91	60	31	02	73 74	47	19	94	69	46	24	03		
	3	54	23	92	61	32	03	75	48	22	95	71 72	47	25	04	2	
	da.	56	24	93	63	- 33	04	76	49	23	98	73	50	27	07	- 2	170
	5	57	25	94	64	34	05	.77	50	24	99	ACCUSED TO SECURE	51	29	08		100
	6		26	95	69	35	07	29.	52	25	2400	76	753	30	. 10	6	ě
	7 8	59	27	96 98	66	37	- 08	18	53	27	OI	12,75,71,65,70	54	33	11	7	
	ALC: UNK	61	30	DESCRIPTION OF THE PARTY.	68	39	10	81	- 54	28	03	78	55	33	12	8	200
	9	1762	1831	99	1970	Scenario (cd)	STATE OF THE PARTY OF		55	29	04	-	56	_ 34	14	2	
	10	64	32	1900	71	2040 41	13	2183 85	2256	2330	2405	2481	2558	2636	2715	10	ă
	12	65	33	02	72	42	14	86	58	32	08	82	59	37	16	製	Ē
	13	66	. 34	03	73	44	15	87	59	33	09	85	60	38	17	12	ĝ
	14	67	35	04-	74	45	16	88	61	35	10	86	03	41	20	14	l
	15	68	37	- 06	75	46	17	90	63	36	11	82	64	42	21		B
	16	69		07	778	47	119	16	64	38	13	89	66	44	23	16	Ē
	18	70	39	08	70	48	20	92	65	39	14	90	67	45	. 24	17	Ē
	19	73	41	10	79	51	22	93	66	40	15	91	68	46	25.	18	ě
	THE K	1774	1842	Igii	1981	2052	2123	_94	Comment of	STATE OF THE PARTY OF	16	92	69	48	27.	19	ĺ
	20	75	43	13	82	53	25	2196	2269	2343	2418	2494	2571	2649	2728	20	Į
	22	76	45	14	84	54	26	97	70	44	19	95	72	50	29	21	l
	23	77 78	46	15	85	55	27	99	72	46	21	97	73 75	531	32	22	Ē
	24	78	47	16	86	57	28	2200	74	48	23	99	76	54	31	23	ĕ
	25	· 79	48	17	87	58	29	02	75	49	24	2500	77	55	羅音	25	99343
	25	82	49	18	-88 89	59	31	. 03	76	50	25	10	78	- 57	30	26	ä
	27 28	83	51	21	91	61	32	04.	77	51	:6	03	80	58	37:	27	Ë
	29	1 84	53	22	92	63	33	05	85	53	28	04	81	59	39	28	l
7	10000	1789	1854	1923	1993	2064	Acres C	1	2281	-54	29	05	SPORT OF BUILDING	2	40	29	ğ
	30	85	55	24	94	65	2135	2208	82	2355	2430	2506	2584 85	2662	2741	30	Ē
	32	- 87	56	25	95	66	38	09	83	56	32	03	86	63	43	31	I
	331	89	57	26	97	67	.9	11	85	59	33	10	88	65	45	33	I
	34	90	58	28	98	69	43	13	86	60	35	19	89	67		84	ļ
	35	91	59	29	2000	70	41	14	87	61	37	1 13	50	69	47	85	Ē
	36 37	93	62	30	OI	71	43	15	88	- 63	38	14	91	70	49	36	1
	38	94	63	32	02	73	44	16	90	64	39	15	93	71	100	137	ł
	39	95	64	33	04	74	45	19	92	60	42	18	94	73 74	52	38	1
	40	1797	1845	1935	2005	2076	2147	2210	2293	2368	-	2519	The second second	Mark Some	JA	29	Ē
	41	93	66	36	06	77	49	21	94	69	2443	20	2597: 98	2675	2755	2000 SEC. 15.1	E
	42	99	68	37	97	78	50	22	96	70	45	, 22	-	76	50	41	ă
0	43	1200	69	39	08	79 80	51	25 25 26 27 28	97	71	Day . Johnson		260				1969
	44	01	70	39	09	82	32	25	98	71 73	47	24	02	Bo.	60	44	3
	46		72	40	11	81	53	26	230I	74	49	23 24 26 27 29	03	82 84 84 86 87	59 60 61 63 64 66 67	43 44 45	6
	47	03	73	43	13	83 84 85 86	56	28	02	75 76 78	52	27	04	. B3	63	46 47 48	į
7.9	47 48	c6	74	44	14	85	57	30	03	78	52	20	Q,	84	466	47	Ē
	49 50	1809	76	45	15	. 86	58	30	04	79	54	29 _31	08	87	67	40	Ē
	50	1808	1877	1946	2017	2083	2159	2232	2306	2380	DAKE	2520	2610	200		12	Ē
100	51	- IO	76 1877 78	47	2017	2081	55 56 57 58 2159 61	2232 33 34	2306 07 08	2380	53 54 2456 57	3532 33 35 36	2610 11 - 12	2688	2768	4015年第33年第35日	-
- 4	52	- 10	79 81	49	19	90	61 63 64	34	08	83	58	36	- 12	90	10	160	į.
100	23	11	81	50 51	20	91	63	30	c9 11	81	59	36	14	92	72	52	-
	44		82	- 52	21 22	92	64	37	11	85	61	37	15	94	74	150	P
	56	14	83 84	53	24	93	65 67 68		12	86	62	38	16	S. S. S.	75	54	b
	57	16.	85 86	54	24	96	68	39	13	-80	64	40.	17	99	76	150	E
10	52 53 54 55 55 57 8 9	16. 17 18	86	56	26	97	69	42	15	83 84 86 88 89 40	66	41:	20	99	为是此分为形成的	57	
2	. 49	19	87	57	- 27	97 98	69.	43	17	91	67	44	71	2700	- 364	150	9

Hh

	M	100 S	erd.	488	1506	60%	616	62d.	044	644	Ced.	46d.	674	68d.	69d	M	
	-0	4074	4183	4294	4409	4528	4649	4775	4905	5040	5172	5324	5474	5631	5795	0	6
	30	76	86	96	13	30	52 54	77 80	07 10	42 44	84 86	25	30	34	98 5851	2	
	3 3	79	88	4300	15	34	46	82	12	47		31	82	39	04	. 3	尽
	4	81	90	02	17	36 38	58 60	84	16	49	99	34 36	85 87	42	06	4	
*	5	E 85	* 24	06	21	40	62	88	19	53 56	93	39	90	47	12	6	
	78	87 83	96	08	23	42	66	92	21	56 58	98	41	92 95	50	18	8	
	9	90	99	12	27	46	68	95	25	60	5251	46	98	55	20	9	3
100	10	4092	4201	4313	4429	4548	4670	4797	4927	5063	5203	5349	5500	5558	5823	10	
	11	94	03	15	31	50	72 74	4801	30	65	05	- 54	03	61	29	11	
100,000	13	99	07	19	35	54	76	03	34	70	10	56	- 08	66	32	13	
Sept.	14	4100	10	21	37	56	78 81	05.	36	72	12	59	13	69 72	34		
	15	93	12	25	41	60	83	10	41	76	17	64	16	74	40	16	0
	17 18	05	14	27	43	62	85	12	43 45	79	20	65	18	80	43 46	18	
	19	08	18	31	46	66	89	16	47	83	24	71	21	82	49	19	
	20	4110	4220	4332	4448	4568	4691	4818	4950	5086	5227	5373	5526	5685	5851	20	
	21	12	22	34	50 52	70 72	93	20	52 54	90	32	76	31	91	54	22	1.
	22	15	25	38	54	-74	- 97	25	56	23	. 34	78 81	34	93	60	23	2
	24	17	27	40	56	76	4701	27	59	95	36	83	37 39	96.	63	21	1
	25	19	31	44	60	80	04	29 31	63	97' 5100	41	-88	42	5701	68	26	18.0
1	27	23	33	46	62-	82	06	33	65	02	44	91	44	01	74	27	
	28	24 26	35	50	66	84	10	35	67	01	48	93	47	10	77	29	160
	30	4128	4238	4352	4468	4588	4712	4840	4972	5109	5251	5398	5552	5712	5580	30	
	31	30	40	53	70	90	14	42	74 76	11	53	5401 C3	55	15	83	31	
	32	32	44	57	72 74	94	18	44	79	16	58	C6	60	2.1	83	33	200
	34	1 35	46	59	76	96	20		81	18	61	09	63	23	91	34	12.5
	35	37	49	63	80	4600	24	51 53	. 85	23	65	11	68	29	97	36	50
	27	41	51	65	82 84	02	27	55	88	25	70	16	70	32	5900	37	6
	38	43	53 55	69	86	04	31	57	.92	30	73	19	73	34	-06	39.	3.70
	39	4146	4257	4371	4488	4608	4733	4861	4994	5132	5275	5424	5578	5740	5939	40	1
	41	48	59	73	90	13	35	64	97	35 37	78 80	26	81	42	14	41	复
	43	50	63	77	94	15	1 00	68	5001	1000	82	31	85	48	17	43	
	44	54	64	77 78 80	96 98 4500	17	41	70 72	03	39 42 44	85 87	34 36	89	51 54	20 23	44	
	45 46 47 48	55 57	68	82	4500	21	46	75	08	- 46	99	39	94	56	26	46	
· N	47	59 61	70	84	02	23	48	80	10	49	92	41	97	59	32	46 47 48	
	40	63	74		04	27	50	1 81	144	51 53	95 97	41	5602	62	35	49	L
	50	4164	4276	4390		4529	4754	4882	5017	5155		5449	- 5605		35 5937 40 43 46	49 50 51 52 53 54 55 56	-
	51 52 53 54	66	78	92	10	31	56	85	20	58	5302	54 58 59	1 07	70	40	51	E
	52	70	81	94	14	35	60	90	24	60	07	58	10	70	46	53	1
1	54	. 72	83	08	16	37	63	92	26	-65	99	1 52	15	8t 8t	49	54	1
Di,	55	74 75	85	4400	20	41	69	96	31		14	60	21	84	55	56	1
	55 56 57 58	77	. 89	04	22	4	69	2.9	33	1.78	21 - 47	67	29	47	59	57	1
1	50	1 3	91	05	20	4	71	4901	3	1 2	1 3	6	20	90		57 30 30	I
825	Sec. A	AND DESCRIPTIONS	MEDICAL	AND THE REAL PROPERTY.	Edia 75	1 J. St. O. P.	N. C. S. A.	ALC: 30.00	CONT. PROS	SEE YES	AS PASS A	The Acres	AND DECISION	A WINESON	EL RAPERE	1 300	EFO.

S. Jak !!

99	200000000000000000000000000000000000000	0123456789
10 30 33 35 75 75 75 78 78 78 78 7	60 13 0 0 1 2 3 4 5 10 27 18 19 33 1 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4	を 日本では
\$\begin{array}{cccccccccccccccccccccccccccccccccccc	99 02 08 11 17 20 23 34 38 40 43 46 49 52 60 55 61 60 70 77 77 82 60 89 90 61 61 61 61 61 61 61 61 61 61 61 61 61	72 75 78 84 84 87 90 93
1	80 83 87 90 93 99 6202 05 6208 12 15 18 21 24 27 30 34 37 6240 43 46 49 52 62 63 63 63 63 63 63 63 63 63 63 63 63 63	50 53 55 59 62 65 68 71 74
39 50 73 45 3 51 53 53 54 54 55 77 14	71 75 78 85 88 91 94 98 6401 04 08 11 14 18 21 24 27 31 6434 37 41 44 47 75 74 77 74 78 88 88 91 98 64 98 98 64 98 98 98 98 98 98 98 98 98 98 98 98 98	39 42 45 49 52 55 58 62 65
50 75 45 3 51 53 83 48 55 17 1 54 79 20 78 56 58 89 54 63 20 32 20 3 3 48 55 20 33 3 48 55 20 33 3 48 52 61 70 24 46 59 59 75 79 12 80 92 59 60 67 77 42 4 4 46 95 79 74 80 79 79 74 80 79 79 74 80 92 59 60 70 78 80 60 49 99 90 90 90 90 90 90 90 90 79 80 70 80 80 80 90 70 80 80 90 70 80 80 80 80	73 77 80 84 87 6601 6605 68 11 15 18 22 25 29 32 36 6639 43 47 51 54 57 61 64 68 71 6675 78 82 86 87 67 67 67 67 67 67 67 67 67 6	39 42 45 49 52 56 59 63 66
75	87 91 94 98 98 98 98 98 98 16 68 99 16 68 98 97 16 16 16 16 16 16 16 16 16 16	50 54 58 61 65 69 72 76 76 80
1	14 18 22 26 30 34 38 46 70 70 70 70 70 70 70 70 70 70	75 79 83 87 91 95 99 90 3
13	57 61 65 76 74 78 82 87 91 12 99 33 7338 42 46 50 55 55 59 94 98 7403 98 7403 98 7403 98 7403 98 7403 98 7404 98 7404 98 98 7404 98 98 98 98 98 98 98 98 98 98 98 98 98	25 20 24 28 32 36 40 75 45 49
51 53 89 54 63 20 2 61 63 95 61 70 34 3 65 69 900 67 77 42 4 70 74 84 50 25 59 6 75 79 12 80 92 59 6 75 79 12 80 92 59 6 85 84 18 87 99 67 8 85 80 8435 8806 9221 9652 10 99 16 53 26 43 18 13 14 22 59 32 50 25 14 19 27 65 39 58 35 15 19 38 77 52 73 52 14 19 38 53 59 80 36	18 22 27 31 36 40 45 50 54 7559 77 82 86 91 95 7600 7605	78 82 86 91 95 04 09
33 48 55 17 1 34 89 54 63 20 2 43 95 61 70 34 3 69 8400 67 77 42 4 79 12 80 92 59 6 79 12 80 92 59 7 8 95 30 99 14 84 9 95 30 99 14 84 9 95 30 99 14 84 9 95 30 99 14 84 9 95 30 99 14 84 9 95 30 99 14 84 9 95 30 99 14 84 9 16 53 25 43 18 13 22 59 32 56 12	799 804 199 140 199 241 299 341 399 741 799 844 899 7894 799 141 199 241 299 341 399 7904 7904 7905 800 800 700 700 700 700 700 700	51 56 61 65 79 75 80 95
3 48 55 17 1 89 54 63 20 2 95 61 70 34 3 400 67 77 42 4 12 80 92 59 67 8 12 80 92 59 67 8 12 80 92 59 67 8 13 80 92 75 9 7 14 84 9 9 14 84 9 435 8806 9221 9692 10 11 10 11 13 25 10 11 14 19 36 00 12 11 14 19 36 10 12 11 14 14 19 36 19 12 11 14 14 19 36 13 13 16 17 17 17 18 13 16 17 17 17 20 12 12 12 12	06 11 16 22 27 38 43 49 154 59 8203 8208 14 19 25 31 36 42 47 53 8208 14 19 25 31 36 42 47 53 82 82 82 82 82 82 82 82 82 82 82 82 82	53 58 69 8 74 79 84 90 95
48 55 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	41 47 53 59 65 71 77 83 89 494 500 61 18 24 30 36 67 73 79 8603 10 8616 22 28 34 41 47 53 59 55 55 57 28 89 10 86 10 86 10 86 86 86 86 86 86 86 86 86 86 86 86 86	95 95 95 95 96 12 18 24 30
55	13 19 25 32 39 45 52 59 88 89 52 78 89 89 52 89 89 52 89 89 52 89 89 52 89 89 52 89 89 52 89 89 89 89 89 89 89 89 89 89 89 89 89	48 54 67 74 80 87 93 99
17 2 34 3 42 3 42 5 50 67 78 8 42 5 50 78 9 67 75 8 43 15 16 19 20 18 13 14 15 16 15 16 19 20 18 15 17 86 22 28 28 27 28 27 28 27 28 27 28 27 28 27 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20	25 36 43 50 58 65 73 80 88 9295 9303 10 18 25 33 40 48 56 63 9371 79 86 94 94 94 94 95 96 95 96 96 97 98 96 96 96 96 96 96 96 96 96 96 96 96 96	55 63 70 77 84 92 99 202 14
1 2 3 4 5 6 7 8 9 10 11 2 13 14 15 16 17 8 19 20 1 22 23 24 25 26 27 8 29 29 31 32 33 34 35 36 37 8 39 40 44 44 44 44 44 44 44 44 44 44 44 44	9701 9701 980 18 26 35 43 52 60 69 9777 86 95 9803 12 21 30 38 47 56 965 74 82 91 9900 18 27 36 45 97 36 45 97 36 47 36 97 36 47 36 97 37 37 37 37 37 37 37 37 37 3	17 20 34 42 50 59 67 75 84
	12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 29 30 31 33 33 33 34 44 44 45 46 46 46 46 46 46 46 46 46 46 46 46 46	1 2 3 4 5 6 7 8 9

	M	2/4	1864	1 164	1874	180 4	700	. 1
	•	offi challesining is	10770	11535	12521	13910	1631	36
		MC SEPTEMBER OF ANY		553	540	III III SINCLAND	113 BEA223 Laborat	6
	3		S THESE CO.	568 482	5 60 000 AG	可用的不适构 的		5
4	4			OF THE PROPERTY AND PARTY.	575		SE SERVERSE	
100	25	189	827	611	618	067	AND DESCRIPTION OF THE PARTY OF	45
	6	199	839			097	- 58	100 100 100
5	8	209	851	641		127	814	
	9	DO BOOK THE WAY AND	8 3	671	678	158	881	35
1	10	S. September 1			A STATE OF THE PARTY OF THE PAR	STATE OF THE PARTY NAMED IN	B. (C. C. C	
1	11	245	899	701	738	14220	16950	SECTION AND ADDRESS.
1	12	258	910	716	759	254	-002	E 198005
	13	268	922	731	770	316	165	13
	14	288	934 946	746	800	318	240	
9	16	208	958	761	821 842	381	310	16
1	17	308	971	792	853	418	474	17
1	18	318	983	808	884	481	556	18
88.0	19	328	995	823	906	515	640	
-	20 21	10338	11007	11839	120:7	14550	17726	
	22	358	032	855 870	949	584	904	21
	23	368	047	885	992	655	997	23
ıŁ.	24	379	058	902	13014	691	18093	1-24
	25	389	070	918	037	727	191	25
	27	410	095	934	059	764	396	26 27
	28	4420	107	967	104	833	503	28
100	29	430	120	983	127	876	615	29
	30	10441	11133	11999	13150	14914	18729	30
	12	451 462	146	032	172	952	848	31
1	13	1 4:2	171	049	219	992 15031	971 19 0 98	32 33
	34	483	184	066	243	071	230	34
	35	494	197	086	267	III	368	35
II:	27	504	210	099	294	152	660	36
13	38	526	236	133	315	1 194	817	37
	19	536	258	150	363	278	980	39
	0	10547	11263	12167	13388	15321	20152	40
	2	558	276	185	413	365	333	41
	3	569	303	202	437	409 453	726	42
4	4	590	316	237	488	499	941	44
1 4	5	601	330	255	513	545	21170	45
4	7 8	612	343	273	539	591 638	680	46
4	8	634	371	358	565	686	967	47
	2	645	384	326	617	734	22279	49
5	OI	10656	11398	12344	13643	15783	22623	50
5	2	679	412	363 38	670	832	23005	51
5	3	690	440	300	697 724	884	23435 23926	52
5	4	701	454	399 408	751	935 987	24499	53
2	5	713	468	426	779	16040	25780	55
3	7	724	482	445	807	994	26046	56
5	78	747	510	483	734 863	148	27192	57 58
5	9.	758	525	502	891	260	22348	59
	为最	SERVICE STATE	Desire Take	一般 大大	STATE STATE	and the same	N. S. A.	-

The Use of the Table of Meridional Parts

IN this Table, the Left hand Column lupon every Page, under M. beginning at 1, and ending at 39, contains the Minures answering to every Degree of Latitude. The other Columns, diftinguished by 1d, 2d, &c. to 89d. contain the Meridional Parts answering to every Degree of Latitude. The Use of these Columns together, is to find the Meridional Parts for every Degree and Minute of Latitude. An Example or two will sufficiently explain it.

Example 1.

The Latitude of 51 deg. 12 min. to find the Meridional Parts.

In the Column under 51 d. and right against 12 M. in the Lest-hand Column, stands 88, and joining 35, the two Figures in the same Column, that stands next above 88, towards the Lest-hand, the whole is 3588, the Meridional Parts required.

Example 2.

The Latitude of 87 deg. 52 min, to find the Meridional Parts.

In the Column under 87 d and right against 52 M. in the Lest-hand Column stands 697, to which joining 13 towards the Lest-hand, the whole is 13697, the Meridional Parts required:

The Use of these Meridional Parts are shewn in the first Problem of Mercator's Sailing, Ghap. 6.

A New and exall KALENDAR, shewing the Prime, Epach, Dominical Letters, and Leap Years, for Twenty Three Tears: Also the Days of the Month and Remarkable Days; with Tables of the Sun's true Place in the Ecliptick, and the Declination of the Sun for four Tears to come; and may indifferently serve for many more.

Years.	Dom. Let-	Cycle O.	Prime.	T a	Shrove- Sunday.	Eafter Sunday	5-12-4820000	Whi Sund	
1710	A	11	CONTRACTOR FOREST	500 EG 500	February 19	April	9	May	28
1711	G	12	3	3	March 2		20	Fune	8
1712	FE:	13	000000000000000000000000000000000000000	600	Febr. 15		Ξς.	May	24
1713 1714	D C.	15	5 5	25	j	March	28		16
1715	В	16	6	6	27	April	17	Fune	_5
7716	AG	17	7	17	12		2	May.	21
1717	S. M. Fra	18	9 200 500 30	28	March 3		21	Fune	9
1718		19	Section 1 and the least	9	February 2	March	13	May	17
1719	D	20		20		2007617			
1720	CB	21	111	-1	28	April	17	Fune	- 5
1721	I A	22	69 EXSERTED 1	12	I C	9	9	May	28
1722	G	23	13	23		4 March	25		13
1723		24	ASSOCIATION OF THE PARTY OF THE	4	2		14	THE COURSE OF STREET	24
1724	ED	25	SELECT AND ASSESSMENT	15	1		5	Triay	Part la
172	C	20	ST 00.500	26	February'	March	28		1 16
1720	All Pills the Pills do	2	40 13/40	7	\$10.005 Print \$100 Pri	o April	10		29
172	the second second second	2		18	1	2		E 17 B 1 C 2 S 2 S 2 S 3 S 3 S 2 S 2 S 2 S 3 S 3 S	2
172	G F		1 19	29		4	21		The state of the s
172	9 E		2 1	11		6		May	1
173	D		3 2	22	and the real	8 March	THE RESERVE	9	- 1
173			4 3	3	· 图 经产品的 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图 图	8 April			
177	THE REAL PROPERTY TO	31	5 4	14	The state of the	41		9 May	• 2

	经 安全等	Control of the Contro	P . 6		76.34	Vece	TTE	N.		
M	N					· 不可是的基础是一个	Dilg	1000	(PES)	rear
Jonth	/ee	Remarkable					1711.			1710
n c	1	dava & lou-	William St. St. St. St. St. St.	CONTRACTOR OF THE PARTY OF		-	1719		The second second	Branch Wilder
days.		thing of flars								
S.	VS.	at midnight.	D M	D. M.	D. M.	D. M	D. M.	D. M	D. M.	D. M'
					1			-		
			VS.	South.	V3.	South	V3.	South.	VS.	South.
1	A	Circumic.	22 14	FIRE 25/10/2015	E PERSONAL PROPERTY AND ADDRESS.	CONTRACTOR CONTRACTOR	DE ESPECIO PERSONE RECUS	COLUMN TO SERVICE PROPERTY.	COLOR DESCRIPTION OF THE PERSON OF THE PERSO	THE RESIDENCE PROPERTY OF
2	В	Sanrise 8.	23 14	21 28	22 59	21 31	22 45	21 33	22 30	21 36
3	C		24 15	21 18	23 01	21 21	23 46	21 23	23 31	21 26
4	D	100					24 47			
3	Ē		SECRECAL PROPERTY.	CONTRACTOR OF THE	Carried agencies of	DESCRIPTION OF THE PARTY.		CANADA CANA	STATEMENT STATEMENT	PROPERTY.
6	Contraction.	Epiphany.	37 10	20 50	20 03	30 45	25 48	20 70	36	20
7	G	Epiphany.	28 20	44	18 0	20 35	20 49	30	34	73
8	A						27 50			
-	<u>-</u>		ACCUSION NAME AND DESCRIPTION OF	Control of the last of	STATE OF STREET	CONTRACTOR NO	28-51	A REAL PROPERTY AND	THE RESERVE OF THE PERSON NAMED IN	THE PERSON NAMED IN
1.5	B		₩. 2 2	20 06	a. 07	20 10	129 52	20 13	29 37	20 16
	C		OI 23	19 53	01 08	19 50	a. 53	20 00	₩. 38	20.03
	P	Sol in Aqua	02 24	19 38	02 09	19 43	OI 54	19 46	01 39	19 50
12	1	Sun r.7 45	33 25	19 25	23 10	19 29	02 55	19 32	02 40	19 36
13	F	11 212	04 26	10 11	04 11	19 15	03 56	19 18	03 41	19 22
14	G						04 57			
15	A	1 20 45					05 58			
16	B	为图录自	07 29	18 26	07 14	18 30	06 59	18 33	06 44	18 37
12	C	The state of the		THE RESIDENCE OF REAL PROPERTY.			08 00	Marine and a second	The state of the s	
A 100000	D						09 01			
1000000	Ē						10 02			
20	F						11 03			
-	\overline{G}	81	-		-				Managed and specific	
1	A	Sun r. 7. 20	12 33	17.04	12 10	116	12 03	16	11 49	15.37
1	R	Sun r. 7. 30 Hydra's Hear Co. S. Pari	13 34	15 47	14 20	16 3	1 3 04	1.0)	12 50	17 50
1	10	Hydra's Hear	14 3	16 29	14 20	16 1	4 4 0	16 30	13 20	
1=	1	Co. S. Paul	17 3	10 14	3 -	10 10	12 00	10 20	14 51	30 20
125	30	30.5. F MM	16 30	15 53	16 21	15 5	8 10 07	16 92	15 52	16 07
26	E		17-37	15 35	17 22	15 3	9 17 07	15 44	16 53	15 48
27			18 38				1 18 08			15 30
2	0		19 3	14 5	19 23	15 0	2 19 09	15 07	18 54	17 11
2	A		20 39	14 38	320 24	14 4	3 20 09	14 48	19 55	14 52
13	OB	K. Char. I	21 40	14 19	2I 24	14 2	15. 图 图 图 图 图 图	14 28	20 55	14 52
13	1 C		22 40	13 59	22-29	114 0	4 22 11	新授机设施	121 56	114 19
	STORY.	Contract of the last	PRINTED AND LONG		deletichases	TENERS IN	Charles and a section of		The state of the s	Deligation of

	F w c	an A			传统的			
8 4	First	Year.	Second	Year:	Third	Year.	Leap	Year
3 Stemarkable								1716
F days, & lou-	1717.	1721.	1718,	1722.	1719.	1723.	1720.	1724
o a thing of flars	⊙ pla.	Odec	o pla.	O dec.	o pla:	Oldec	O pla	O dec.
9 9	The second second			-			D. M	The second second
	ALC: NO.	100000000000000000000000000000000000000	-		THE PROPERTY OF	South.	THE RESIDENCE OF	South.
I D	3 -	South.	Control of the Control	South.	(A. S. C.	F100 BNS	600年在2000年	er to the
E PurifMary							22 57	
1 I I ione Heart							24 58	
4 G							25.58	
SA	ALCOHOLD TO	The second second	THE COLUMN TO			-	MARKET SHAPE STORY	March Street
6 B Lions Neck.	the time and the bill below.	AL MOREOREST CONTRACTOR	a conservences and a series	BLACK CONTRACTOR OF THE PARTY O	A Read of the St. Co.	The state of the s	26 59	V 76125111 COME NORTH A
7 C Sun r.7. 1.	EDUCATION OF THE PARTY OF THE P	第7日報のこれでもかり	B TOOL TO SECURE A SECURE	SO PRINCIPLE BOY CANTON	F 1955, 7020-C-207, 1036	A PERSONAL PROPERTY OF THE PROPERTY OF	27 59	THE RESERVE OF THE PARTY OF THE
8 D Sol in Pilces.	经工程的 在1000年的				B (MC) 77 CA (5/3) (A)	PERSONAL PROPERTY.	£. 05	
9 E				Service Property	-			PARTY NAMED IN
io.F	21 44	H10 5	01 30	nio ly	421 13	111 03	21 00	11 08
u G							22 01	
12A							03 01	
13 B	THE RESERVE TO SERVE	STANCES OF STREET	Part of the Part o	STATE OF THE PERSON	The same of the		14 01	CONTRACTOR OF THE PARTY OF
14 C Valentine.						109 31		CASTLANDISCUSSION TO
15 D Sun r.6.45	06 40	100 0	31	100 01	05 16	09 14	26 02	09 15
16 E Lower of	07 40	108 40	7 31	08 40	07 17	08 51	07 02	08 34
F two fore-		The Property lies			-		08 02	CONTRACTOR OF THE PARTY OF THE
RG moff in Got	09 4	607 59	09 3	108 01	09 1;	08 06	9 02	28 12
To A great Bear.							10 03	
26 B							11 03	
EIC -		-	1-				12 03	MINERAL STREET
82 D	13 4	506 2	13 3	206 29	13 1;	06 35	IN NOTHING WILLIAMS	06 40
12 E Sun r. 6 ac	14 4	606 0	14 3:	2 06 00	14 1	7 06 12	14 03	00 17
23 E Sun r.6.30	115 4	505 3	715 3	2105 4	115 1	705 45	11) 03	05)4
	10 4	DOC 14	410 22	205 20	OIIO I	705 29	10 03	0) 2.
25 G S Matthia	17 4	604 5	17 32	2 04 5	17 1	7 05 02	17 02	25 08
27B	120 41	004 2	710 3	104	110 1	7.04 29	18 02	04 44
28 C	19 40	504 0	19 3	1704 09	19 1	704 1	19 02	04 31
150 P	20 4	5103 40	20 31	103 40	120 1	003 4:	20 02	3 3/
	Who	nit is Lo	ap-Year	, Februar	hath 2	days.	21 02	23 34
		(2 ()					4	
1995年1996年1996年1995年1	of Contract	N. S. William		2000年				7

	-	化学的现象	1 F2 0		10	STATES			计算术扩张	34
M	×		FITH	rear.	Secon	d Year.	Thir	d Year	Leap-	Year.
Month	S.	Remarkable	11709.	1713	11710.	1714	.7111	7115	1772	2.4
	0	days, & fou-	1717.	1721	. 1718.	1722	1719.	1723.	1720.	1724
days.	ay	thing of star	Opla.	Odec	Opla	Odec	O pla.	10dec	anh	
ys	S.	ar midnight.	5 V	0	DV	Care			1213	OGCC
- 6	1		The second second	AND DESCRIPTION OF THE PERSON NAMED IN	The second second		D, M.	100 miles	The second secon	\$5000 AND
2	4		¥.	South.	X.	South	. X.	South	×.	South
	D	David.	21 45	03 17	21 21	02 22	21 16	02 28	12 01	
1	F	Lion's Tail.	22 45	102 53	22 30	102 50	22 16	02 04	22 01	200
2	F	Lower of the	25 45	02 20	23 30	02 25	22 16	02 41	24 01	02 4
3	G	LAO TACCET III	24 44	02 04	34 30	02 11	24 15	02 12	25 00	02 2
4	_	of Great	7 74		The second second					01 59
5	Sec.	Bear.	25 44	42	45 29	01 48	25 19	01 54	26 00	01 36
6	B		20 43	01 18	20 29	01 24	26 14	o1 30	27 00	01 12
7	C		27 43	00 54	27 28	01 00	27 14	or ce	27. 59	00 48
8	D	reserves as	28 42	00 31	28 28	00 37	28 15	00 43	28 59	00 25
9	E		29 42	00 07	29 27	00 12	29 13	30 10	29 68	00 0
9	F	Sun r.6.4.	Y. 41	Nor16	Y. 27	Norte	Y. 12	Noros	Y. 57	Name
	C	Upper of	21 41	00 40	01 26	00 24	01 121	00.28	OI 47	000
	A	wo latter in	02 40	01 04	02 25	00 58	02 11	00 52	02 56	40
2		of Great	-	AND DESCRIPTION OF				- 3-		1 10
3	0.7544	Bear.	3 39	01 27	03 25	01 21	03 11	01 16	3 55	1 34
- PO		Sol in Aries.	04 59	01 51	04 24	01 45	04 10	01 39	4 55	57
5	DI	ATT CONTR	05 30	02 14	05 23	02 08	05 09	02 03	5 54	2 21
6	E		00 37	02 38	06 23	02 32	06 08	02 26	53	2 44
2	F		07 36	03 01	7 22	2 55	07 08	02 50	7 52	12 00
	G	Sunr.5.45	08 350	23 250	08 21	32 18	28 076	2 120	8 52	
1000 100	A		09 35	3 48	9 20	3 42	09 06	3 360	9 510	2 3 4
Per 23 (1)	B	THE PARTY OF	10 340	04 111	10 19	4 05	10 05	4 00 1	0 400	4 37
	- 1	aft but two	1.000	THE PERSON PROPERTY.	0	を表現を	中国公司	10 SEE SEE	Secretary	Heat Research
1		n gr. Bears	12 22	4.34	1 10	4 29	11 040	4 23	490	4 44
		ail.	12 27	4 37		+ >2	2 030	4 46 1	2 48 0	5 04
			7 C C C C C S S S S S	San Line To State B	[10] (10] (10] (10] (10] (10] (10] (10] (h	A 20 S S S S S S S S S S S S S S S S S S	Comment of the second		5 27
4 E	= 1	- 74					4 01 0	AND THE RESERVE OF THE PARTY OF	4 40 0	5 49
5	200	in. Mary.	COLUMB TO THE SERVICE	6 06 1	5 140	6 01 1	5.000	5 55 E	5 450	6 12
6	200	unr.5.38	16 27	0 29 1	6 130	6 23 1	5 500	6 181	6 43 0	ALCOHOL: UNKNOWN
. 60	B	1	7 26	6 51 1	7 120	7 46 1	6 580	6 401	7 42 0	5 551
8			8 250	COLUMN TO THE REAL PROPERTY.	8 110		20 一种发生多种 数	7 03 1	27、 为 4、 10 10 10 10 10 10 10 10 10 10 10 10 10	7 20
o I	5.V	irg. Spike	9 240	7 36 1	9 100	7 31 1	101		SECTION SECTION	
	1000	aft but one 2	thesis at the first first best	THE RESIDENCE OF THE PARTY.	0 080		SECTION AND ADDRESS.		4 100 Ta. 100 GO	PHOTOLOGIC C
	T	ail. 2	1 210	COLUMN TO SECURE AND ASSESSMENT	I 07 0	COLUMN CO	9 54 3	7 48 21		PRODUCTION S
20		Marie Transfer		4-14	- 0/0	0 17/2	1310	8 01/2	1 37'0	8 26

243		Apr	il h	eth X	XX D	ays		
33	First	Year.	Second	Year.	Third	Year.	[Leap-	Year.
Remarkable days, and fou-	1709.	ALCOHOL: NO. 100	DESCRIPTION OF THE PROPERTY OF	1714.	SERVICE STREET, STREET	A CONTRACTOR AND A STATE OF THE PARTY OF THE	1712.	1716.
days, and lou- ching of stars	1717.				1719.			1724.
at midnight	PROBLEM SHEET	O M	O M	D M	O pla. D. M.	Date	D M	odec.
		SHAREWARD OF STREET	CONTRACTOR OF	SOURCE AND DESCRIPTION	COMPANY DISCUSSION	CONTRACTOR OF	STATE OF STREET	
1 G Sun r. 5. 15.	22 20	North	Y	North.	27 63	North	Y.	North.
2A	23 19	09 05	23 04	08 59	22 50	08 54	23 35	09 10
Last in great	24 17	09 26	24 03	09 21	23 49	09 15	24 33	09 32
Bear's Tail,	25 L6					-	25 32	
6E					25 46			BELLEVILLE STORES
75	28 11	11 51	27.57	10 46	27 43	10 41	28 27	10 35
8 G Sun r. 5. 11	29 10	11 12	28 56	11 07	28 41	[I 02	29 26	11 17
9 A Sol in Taurus	0. 08	11 32	29 54	11 27	29 40	11 22	Ö · 24	11 38
10B Dragons tail	01 07	11 53	Ø. 52	11 48	D. 38	11 43	01 23	11 58
12D	THE MEN ! LINE TO DESCRIPTION	ALL SECTION AND ADDRESS OF THE PARTY OF THE	the fear time that the same	CONTRACTOR OF THE PARTY OF THE	01 37		A PROPERTY OF STATE OF STREET	The second contract of
12 6	The second second		and the second	2000 CA			Transaction of the last of the	12 58
TeG.					04 32			
16 A	05 58	13 32	05 44	13 27	05 30	13 23	06 14	13 37
17B	(II) Americano en en	-	The second second	School Street	06 28	100000000000000000000000000000000000000		
18C					07 20			
19 U Sun r. 4. 45								14 34
Scale of Lik								THE RESERVE THE PROPERTY OF
22G	11 47	AND DESCRIPTION OF THE	A Design Control		STATE STREET		T2 03	15 28
23 A	12 45	15 42	12 31	15 37	12 17	15 33	13 01	
24B					13 15			16 04
250 Matth. Ex		STATISTICS NO.		make well as			SEC. 13.10.10	-
27 E two formost					16 09			16 38
28 F Sun 1.4.30	17 35	17 00	17 20	17 02	17 07	16 58	17 51	17 11
29 Gin of the	18 3	17 2	18 19	17 19	18 05	17 15	18 48	17 27
30 A northermost	All District Annal States and	 1 BESCHWINGS STREET 	60 BERLING TO THE CO.		19 02	SECURITY OF SECURI	1 1000 AT ST GLOSSING TO	17 43
1 locate at Tito	. 20 2	77 54	120 14	17 50	19 00	17 46	30 44	17 50

V	6		Fi	rĢ	Yea	ır.	Sec	one	Y	ar.	T	ilid	Ye	ar	L	eap	Y	ar
Month	Vec	Remarkable	170	09.	17	13.	17	10.	17	14-	17	11.	17	15.	171	12.	17	16.
Ť	×	days, & fou-	17	17.	17	21.	17	18.	17	22.	17	19.	17	23.	17:	20.	17	24.
da		thing of stars at midnight.	0	pla	0	dec.	0	pla.	0	dec.	⊙.	pla.	0	dec.	0	pla.	Od	oc.
davs.	ys.		D.	M.	D.	M	D.	M·	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.
2				P 20000	No		-	٥.		CONTRACT.	-		200	rch	2000	10	Color	Means
			21	ALC: UNKNOWN	100000000000000000000000000000000000000	17015-0005	AND DESCRIPTION	10 mg	0.9974248	T- 800 - 400 - 200 - 100	1500 50	58	18	02	21	42	NO	13
1	B	Phil.& Fac.	22									56						28
2	C	D.:-1A:-	22									54						43
3	D	Brightest in the Crown.	24					05				51	18	46	24	35	18	57
4	E	Brightest in	25	100 IO 6	-		11/200		S).700	Name of Street	-	49	The same of				19	11
5	13	Serp. Neck	10000									47					The State of	NO PERSONAL
6	G	Sun1.4.15.	27									44					19	38
7	A		28									42					10.00	91
8	0	1	-	-			1		1	many.		40					100000	02
9	C	Scorpion's	100 00000		12011103939	SEC. 125.19	100000000000000000000000000000000000000	31442603	A PARTY OF THE PAR		100000000000000000000000000000000000000	37	PE 2007 12	August 1970 Page 1970	500 000 000	COLUMB TO SERVICE AND ADDRESS OF THE PERSON	MARKET CO. P. A.	Market and and
	-	Forehead.	4 1 1 1 1 1 1 1 1	C. Charles	1000 C	E.E. CHECK	05/36/37/450	63:55 (198 6) (3		10-11 3-48 THE	15000	35	20000000	STATE OF THE PARTY.	220000000000000000000000000000000000000	J-5-2-4663	ALC: YES	4550E00
T.A	E	SolinGemini.										32						
-	F	-	02	1000000	1		-	E 1000	200		1000	30	BANKS:	-	10000	INCOME.	2000	200
13			03	3 - 4 - 4 - 7	3 (5, 15, 5)	10000-0000		\$155 DEFE	100 PM.	3. 0. 1000 411	REC 1/10 3	28	0.0000000	PPROXIM	(COD)	10% (20%)	10 mm dr 3	8007 J. S. S. S.
4	A	Scorpion's	04			DECEMBER 1970	1000.00	5. 445 4446.25	10 TO 17 TO 1	ACID THE LUIS	10000000	25	BC11.00.1	BURNEY TO SAIL	E 1044, 1564	0.00	1000 0000	
0.0		Heart	25	4000	4 000000	200 100 100	A Mary State	9000	0.000000	FIRST CAMPACA	1000000	23	B0000000	E R 126/2019	1000000	10 P. C.	15 12 37 7	\$300 at 1500
16	=		06	AS	21	-20	06	24	21	27	06	20	21	24	37	04	1	22
17			07	TO THE REAL PROPERTY.	AND THE PARTY OF T		** BOOK 6430-		0.000.0000			17	6 S0000000	E 52/133/6 76/	a district of	2.76		41
15	E	Sun f. 4.	08									15					11	50
19	FG		09	DATE OF THE OWNER, THE PARTY OF	and the second	A	ALC: UNKNOWN		DESCRIPTION OF THE PERSON NAMED IN	000000000000000000000000000000000000000	0.000	12	1000000	protection and the second		TA CONTRACT	0.000	59
-	-		110	38	22	00	10	24	22	02	10	10	22	01	10	100	17	07
21	D		II									07					22	15
2	STO CO		12	31	22	21	12	18	22	19	12	05	22	17	12	48	22	23
2:	ď.		13									02						
_	1	7 (2	14		Name of	NAME OF STREET	1000	Carrier Street		SAME OF STREET	No. of Concession,	59	1	10000		43		(ACCUPATE
2	A P	11. 11	17 cel 1									57					22	DB 757000
20	10	The last of the la	16	2:	222	47	16	08	322	46	15	54	22	44	16	100000000000000000000000000000000000000	22	
2	A		17									51			17	35	经基金	54
-	-	K. Charles II.	18			100		-		20000		49	200	-	-			Total Control
29	吧	Man C. D.A.	19	St. (1988) 550								46						
3	C	Sun 1.3.50	0.000									43						
2	110	1,000,000	1	1100	A STATE OF	建				7. 790		Anda	-	1		No.	72	

44			· Ja	ne hat	h XX	X day	S	4.	12.
Mont	Remarkable	1709.	1713.	1710.	1714	Third 1711.	1715	1712.	1716
h days	days, & lou-	⊙plā.	O dec.	⊙ pla.	⊙ dec.	O pla.	o dec.	⊙pla.	Odec.
18.	at midnight.	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.	D.M.	D. M.
, E	0	IN THE PERSON NAMED IN COLUMN TWO	CALCULATE DE LOS CONTRE	A STATE OF THE PARTY OF	THE RESPONSE WAS AN ADMITTAL	ц. 20 40	ESSENT PROCESSOR CONTRACTOR	THE RESIDENCE AND ADDRESS OF	North
2 F		22 05	23 15	21 51	23 14	21 38	23 13	22 21	23 16
3 A			A STATE OF THE PARTY OF THE PAR	The second second	CONTRACTOR OF THE PARTY OF THE	22 35	I DESCRIPTION OF THE PERSON OF	A STATE OF THE PARTY OF THE PAR	The state of the s
5	3			1000	-	24 29	23 22	25 13	23 24
6	Ď	OR DESCRIPTION AND ADDRESS.	23 25	PERSONAL PROPERTY AND LOSS OF	TO SECURITION OF THE PARTY.	25 27	23 24	A CONTRACTOR OF STREET	OF RESPECTATION AND ADDRESS.
ξ						27 21			
	G Sunr. 3. 48	TO STAN ASSESSMENT THE	TO BUT SHOWS THE WAY		SERVICE TO SERVICE STATE OF THE SERVICE STATE OF TH	9 28 18	CO. Co	THE REPORT OF THE PARTY OF THE	
11	A Sol in Cancer	95. 4	23 29	95. 2	23 2	9 95. 1	23 29	5. 56	23 29
Railland Pil	5	The second second	1		40 SSL493370	901 10		1	23 28
14	Ď.	33 3	2 23 2	03 1	8 23 2	703 0	23 2	7 03 47	23 26
15	F	ESS. ESSENCE DESIGNATION	THE RESERVE THE PARTY AND THE	CONTRACTOR STATE OF THE STATE O	537 PM V 05 MEDIANO NA	5 04 C	TO EMPLOY OF THE PARTY.	CONTRACTOR STREET	TO BE AND THE PROPERTY OF THE
17	G Brightest in the Harp.	56 2	23 20	06 I	0 23 2	105 5	6 23 2	106 39	1
18	A					8 06 5			6 23 10
20	Charle	9 1				108 4			
21	5 Sun 1. 3.50		STATE OF THE PARTY	DOMESTIC OF THE RESIDENCE OF THE PARTY OF TH	Marie Charles and Charles	709 4	CONTRACTOR AND AND	SOURCEST AND STREET	6_22 L00377802 SP4030
23	La Company	12-0	722 5			711 3	MAIN COUNTY CARRY CASE - VICE		2 2 5
24	G Fobn. Bap	13	4 22 5	Miles Barber	THE RESERVE	2 12 3	30.00	THE RESERVE OF THE PERSON NAMED IN	0 22 4
25 26	B	STATE TO STATE OF THE STATE OF	1 22 4 8 22 3		VEG. 9 8220 (88/02/10)	014 3	ECO MERCE 25-50, 188	8 14 1 2 15 I	722 4
27	C'	115 5	5 22 3	215 4	2 22 3	4 15 2	8 22 3	5 16 1	1 22 3
20	E Perer Ap	Contraction of the Contraction o	and Microscopics	The second section	CONTRACTOR OF THE PERSON NAMED IN	7 16 2		1 18 0	5 22 1
30	F	18 4				2 18 1		CONTRACTOR	250 100 000 000 000 000

ŧ

						This			37 L
3 5	1-	First	Year.	Second	I lear:	1 1110	Year.	Leap	1 car.
Month	Remarkable	1709,	1713.	1710	1714	1710	1715	1712.	1710.
	Days, & fou-								
days.	thing of stars at midnight.	O plai	O dec.	O pla.	O dec.	O pla.	⊙dec.	Opla.	O pec.
ys.	at Illiam B	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.	D. M.
	-	90.	North.	50.1	North.	· 60.	North	95.	North
03310		BUZZE WATER BY THE	CONTRACTOR STORY	SHOW SHOULD SHOW	A SECTION OF THE PROPERTY.	EVENT BETTER THE COLUMN	22 05	000000000000000000000000000000000000000	CHRONOSIGNOS SERVICES
1 G							21 57		
2 A									21, 42
3 B							21 40		
	3011.4. 2.	A Line of the last	SECTION SECTION			A COLUMN TO SHARE WE	21 30	DATE OF THE PERSON NAMED IN	Contract of the Contract of th
5 L	Parces								21 13
6 E							21 10		
7 F	Shoulders	ALC: SELECT HOME ME	STEELING STOTE COLD OF THE	THE PERSON NAMED IN		 ID-Zeben (1980) (1980) 	2 ENGLANCE CONTROL SERVICES	100000-00000000000000000000000000000000	20 51
-	Land of the state of the state of	The second second				-	DECEMBER OF THE PARTY OF		20 40
9 A	DEPT. Market St. American St.						20 38		
10 8							20 26		
12							20 14		
S 2000 20		DOMESTIC STATE	Section 1981		-	SACTOR DESCRIPTION		District Services	COMPANIES CO.
13 E	COLD TO SERVICE MANAGEMENT OF THE PERSON OF	A Charles And Late Control of the Control		S SECURIOR STREET	A SUNDANIZUOTE SERVICE	O DESCRIPTION OF THE PROPERTY	20 02	10050540045050065.cc	I TOTAL CONTRACTOR
14 1							19 49		
16		 A CONTRACT OF A CONTRACT 	THE COLUMN TWO IS NOT THE PARTY.	(i) (i) (1) (i) (ii) (ii) (ii) (ii) (ii)	 DEMONSTRATORS INCOME. 	0.0000000000000000000000000000000000000	C TOURS STORY TO A CONTROL	A SECURED VIOLENCE OF THE PARTY AND A	19 13
-	Cunedie	100000000000000000000000000000000000000	ar magnitude with a finished	professioners and	Control of the Contro	-	CAMP CONTROL STREET	-	
13 1	在10年7月期125日以上7月期15日的E207月								
20 (615-22) (61	Swans Tail								18 45
20	D- Dabie	and the second second					18 27		
	begin.	9/ 57		The second second	NAME OF TAXABLE PARTY.	A SERVICE DEPT.	155 MINUSTER 152-153 MIN	甲型点为邻国国际	THE RESIDENCE OF THE PARTY OF T
21	25-37-3						18 12		
23 EXTENS 6		09 4	17 50	09 35	7 53	09 20	17 57	19 04	47 45
24	1	10 40	17 34	10 3	417 38	10 18	17 42	IL OI	7 30
30 Later 6		The second second	OF STREET, SQUARE, SQUARE,	CHARLESTON STREET			17 26	Becarries 1783	
25	James Ap								A STREET WAS DESCRIBED.
26	Sun r.4.30	13 31	10 40	13 24	110150	13 10	16 54	13 54	16 41
27	PR AND	14 30	10 29	14 22	1613	14 0	16 37	Section Control of the Control	经有关的
NEW YORK OF THE PARTY NAMED IN	CARL STATE OF THE	NAME OF TAXABLE PARTY.	CONTRACTOR OF STREET	AND DESCRIPTION OF THE PARTY OF	216116		come disease, and and	PATE-AND STREET	16_07
29	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.						16 03		15 5C
30	n n						15 46		15 33
31	DI	118 2	5 14 2	शा 8 ता	2119122	17 98	14 28	18 42	15 15

246				Aug	uf	ha	th	X	XX	I D	ay	5.	To the second				1
7 21	111.	Fi	rA	Yea	r.	Seco	nd	Y	ear.	Th	ird	Y	ear.	Le	ap-	Yea	er.
3 2 Re	markable	170	9.	17	13.	171	0.	17	14	171	I.	17	15,	171	2.	17	16.
	s, & lou-		and the last of the	NO ASSESSMENT	15 (\$100,000)	から ないと	SAPLE NO.	Total State of	The second	CONTRACTOR	Charles Street	Children's		Co-4270.354	200	Carlo Carlo	MARKET A
	niduighr.					⊙ p											
5	4	D.	M.	D.	M	D. 1	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.
114	12.	શ		No	rth	શ્		No	rth	श्	•	No	rth	ถ		No	
130	5 01 0	19	24	15	02	19	10	15	06	18	56	15	1 I	19	40	14	57
3 E gn	Brakes	20	22	14	44	20	08	14	48	19	53	14	53	20	37	14	39
4 F	nr.4.45	22	17	14	07	22	03	14	30 I I	21	51	14	34	21	35	14	10
GG.	1 05 10					23											
6A	V 1202	24	14	13	29	23	56	13	32	33	4/	13	28	34	28	13	23
30	1025 4	25	10	13	09	24	59	13	14	24	42	13	19	25	26	13	04
1951	26 %	26	68	12	50	25	94	12	54	25	40	12	59	26	24	12	44
25	E 75 / A	27	06	13	30	26	52	12	35	26	38	12	40	27	22	12	24
177	6 (21)	28	04	12	10	27	50	12	15	27	36	12	20	28	20	12	04
12 G	CaQSIA'S	29	02	II	50	28	40	II	55	28	34	12	00	29 m	18	11	44
La A Sel	in Virgo,					-	-	_	-	Separate Park	BA STORY	September 1			_		-
14 B		00	50	10	48	or	44	11	52	01	30	11	19	01	14	10	42
15 C	47	02	54	10	28	02	39	10	33	02	26	10	38	03	10	10	22
16	15 65/12	03	52	10	17	03	37	10	12	3	24	10	17	04	08	10	10
꼬느	中极为	34	50	09	43	04	35	09	51	04	22	09	56	05	06	09	40
ra G		25	48	29	24	05	34	09	29	05	20	09	35	06	04	09	18
A	T SY	26	46	09	03	06	32	00	08	06	18	09	13	07	02	08	57
E B B	melhade	37	44	00	41	07	30	00	40	27	10	00	52	08	00	00	35
22 C	meniaut,					80											
22 D						10											
S could a Rossell Print M	erthol.A	111				11										28.75. E-51.	07
T F get	in Pe- ius Wing,			100 P	10 mm		1		-	THE REAL PROPERTY.		-			71 57	-	
26 0 20	d beginn.	13	34	06	28	13	20	06	34	13	06	06	140	13	50	06	23
27 14 12	his Leg.	14	32	06	06	14	18	06	12	14	04	06	17	14	48	06	00
40 7 en	d-	F Incommune	THE REAL PROPERTY.	-		15	-	-							-		
10 C 21	ın r.5.30	16	29	05	21	16	15	05	26	16	Of	05	32	16	45	05	15
30 D	4.	17	27	04	50	17	13	05	04	16	59	05	09	17	43	04	
Pol P		10	40	•04	35	[18	12	104	41	117	20	104	48	118	42	04	29

na

6

			0.04233232842.00		DESPESSE!	th X	Partie Marie Sal	WALL SHARE	5.5世纪1000			24
1	ĭ	W	Fin	ft Y	ear.	econo	Yea	r. Th	ird Y	ear,	Leap	Year
	Month	Remarkab	u-171	7. 17	21.	718.	1722	171	9. 1	722	1712	1716
		athing of ft.	irs o p	la. O	dec	o pla.	O de	00	pla.jC	dec	O pla	10 de
1	days.	at Midnig	D.	M.D.	M'I). M.	D. N	1. D.	MD	. M.	D. M	D. N
1			一一双			ny.					The second second	Nort
1	1	F	19	24 04	121	9 10	04 1	8 18	5604	23		34 O
1	2	G Lon.burnt	56 20	23 03	492	0 08	03 23	5 19	55 04	00	20 39	23 4
1	24	A	21	22 03	26 2	1 07	3 32	2 20	13 03	57	11 38	33 26
-		8	5.20 BURSE 201	BOTTON BANKSON		2 06	DIPLY DOWN		100	43.00	WORLD STATE OF THE PARTY OF THE	2 57
		Sun r: 5.4	5-24	802	16 2	03 0	2 22	23	002	28 2	4 3	32 23
						02					B42250625	DI 47
	8 1		Marie Company of the last of t	medi bersen n		010		-	The latest terms and the latest terms are the lates		The second second	31 23
	90					590						M oc
L	9		Lan T			580						00 36
I		Andromeda's Head	a. 1	cS.	04 29	560	0 02	29 4	100	07 1	26	3. 10
ī		Sun r. 6. 0									-	00 34
1	ΊĒ	Sol in Libra.	02.0	800	51 21	540	0 45	01 4	000	390	2 24	
15	F	End of Pega- fus Wing.	CARL SECTION OF SECTION AND ADDRESS OF SECTION ADDRES	50 March 2010	ACCRES THE BUILDING	530	TWY SEASON D	COLUMN TOWNS AND	20 000200000	BECKER DELL	400400000000000000000000000000000000000	21
16					COLOR COMM	510	The second second	-				The second
17	A	THE CASE OF A LAKE STATE OF THE	PERSONAL COLUMN	A CONTRACTOR OF	T12 20 P 51 SE	50 02	1719-77 EXE 16-16	第二位(二层)/位	AT EURO DIRECT		ACCUPATION OF	CONTROL SECTION A
	BC	March Control (St. 1) Car State (St. 1) Experience (St.	07 03	02 4	8 06	5002	42	06 35	02	37 07	200	2 55
20	1	I am in cal				48 03						3 18
21	Ē	Sun .16.15.	09 02	03 3	608	47 03	29	8 33	03	24 09	180	3 41
22	F	Matth. Ev.	10 00	03 5	8 09	47 3	53	9 32	04	47/10	170	4 05
23	100	Pole Star.	12 00									
25	A		STATE OF THE PARTY OF	-	PERSONAL PROPERTY.	45 05	CONTRACTOR NAME AND ADDRESS OF	-				and the second
		Southermost in Androme-	12 58	05 3	113	44/05	25 1	3 29	05 1	20 14	1409	
27	100.00	da's Girdle.	14 58	05 5	4 14	43 05	48 1	4 29	05	13 15	1400	00
28	E	Sun				43 06					1300	THE RESERVE TO SERVE THE PARTY OF THE PARTY
29	F	Sun r. 6.30. Mich. Ach.	16 57	07 0	217	4106	341	7 27	06 5	218	1207	40
30	G	MICD. ACh.	17 50		1				3.74	-		1

nda G

248	October	hath XXXI days.	
21/1		ond Year. Third Year.	
Non Remarkable days, & fou-	1709. 1713.17	10. 1714 1711. 1715	1712. 1716
THE THIRD PLANTS BY THE PERSON OF THE PERSON		18. 1722 1719. 1723.	
at midnight.	⊙ pla. odec. o	pla O dec. O pla O dec-	O pla. O dec.
	D. M.D. M.D.	M. D. M. D. M. D. M.	D. M D. M.
	PARTIES AND ADDRESS OF THE PARTIES AND ADDRESS OF THE PARTIES OF T	South South	
A B		41 07 20 18 27 07 14	
13 C	19 55 07 48 19	41 07 42 19 26 07 37	20 1107 54
4 D	20 55 08 10 20	40 08 27 21 25 08 22	22 11 08 20
5 E Sun r.6.45	THE RESERVE AND THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TW	40 08 50 22 25 08 44	
6 F		39 09 12 23 25 09 06	
7 G		39 09 34 24 25 09 28	
8 A		39 09 56 25 24 09 50	
9 B	26 53 10 23 20	39 10 17 26 24 10 12	27 09 10 29
10 C	27 53 10 4427	38 10 40 27 24 10 34	28 09 10 50
12 E fouthermoff		3811 00 28 24 10 55	
Foot,	Charles of the Party of the Par	3811 22 29 24 11 17	
14 G Sel in Scorp.		1. 38 11 43 M. 24 11 38 1 38 12 03 01 24 11 99	02 09 12 14
15 A Sun r.7.0	01 53 12 090	2 38 12 24 02 23 12 19	03 09 12 35
16 B	03 53 12 500	3 38 12 45 03 23 12 40	04 09 12 55
17 C		4 38 13 05 04 24 13 00	of the particular and the second state of the second
18 D Luke Ev.	05 53 13 300	5 38 13 25 05 24 13 2	106 0013 36
19 E	06 53 12 400	6 38 13 45 06 24 13 40	007 09 13 55
20 F	A STATE OF THE PARTY OF THE PAR	7 39 14 05 07 24 14 00	The same of the sa
21 G	08 53 14 290	8 39 14 24 08 24 14 2	009 10 14 34
22 A Sun r.7.1	509 53 14 480	9 39 14 44 09 24 14 3	910 1014 54
230	10 54 15 07 1		7 12 10 15 31
35		CONTRACTOR OF THE PROPERTY OF	
26 F Whales In	12 54 15 44		4 14 11 16 07
27 F	14 55 16 20	13 40 15 58 13 25 15 5	215 1116 25
28 G sim. & 74	de 15 55 16 38	15 41 16 34 15 26 16 2	9 16 12 16 43
		16 41 16 51 16 27 16 4	
30 8 right Side	17 56 17 13	17 41 17 08 17 27 17 0	4 18 13 17: 17
31 ClSunr.7	10 18 57 17 20	18. 42 17 25 18 27 17 2	1119 13 17 34

-	_			The subsection of the		e kompanion	Bar And			249
X	-	Y THE STATE		Year.	Second	Year.	1 mrd	Year.	Leap	Year
onth	èc	Remarkable	1709.	1713	1710.	1714.	1711	1715.	1712.	1716.
0.000	×	days, & fou-	1717	1721.	1718.	1722.	1719.	1723.	1720.	1724.
days	da	thing of flars	Opla.	10dec	Opla.	Odec.	O pla	Odec.	Opla	Odeo.
19	NS.	at midnight.		Constitution of the last		Manager Street, Street,	MACHINE ST. SECONDO	D. M.	STORES AND AND	1 (Francisco) (Francis 1950)
24.0					AGE SIL		Total Contract		D. M.	D. 10
.1	Ü.	1,423	m.	South	m	South.	m.	South	m.	South.
1	D	All Saints.	19 57	17 46	19 43	17 42	19 28	17 28	20 14	17 50
	E	10-10-11-11	20 58	18 02	20 43	17 58	20 28	17 54	21 14	18 06
3	Per	that it is	21 58	18 18	21 4	18 14	21 20	18 01	22 15	Sec. 132. 2 %
4	G	K. W. Nat.	22 59	18 3	22 44	18 29	22 20	18 26	23 15	18 37
5		Pow. Plot.					Sections appropriate	MACHINE PROPERTY.	24 16	SERVICE SERVICE
6	B	Cole &						18 56	SECTION TO BE ANY RESIDENT	
7	C		26 01	10 18	25 46	10 14	50 00	TO TI	26 13	
8	D	Sun r. 7 43	27 02	19 32	26 47	19. 28	26 22	19 25	27 18	10 26
4	E	3-0-134	28 0	10.46	27 47	10 43		19 39		
10	E	经验 经数据	1332/01/2325	19 4	28.48	10 66	20 33	19 53	20 19	19 49
1 1	G	Sol in Sagit .	2.04	20 12	20 40	20 00	20 24	20 06	75 20	20 03
£ 2	A							20 19		
13	B	7 50 0	INVASIBACILIPES	Street, Square, Square	-	Calman	Control of the last of the las		1	CONTRACTOR SERVICE
14	C	SAZE ESPE	23 06	37	22 51	20 46	01 30	20 31 20 43	74 44	40 40
15	D	BCC 1841	04 09	20 49	32 3	20 58	02 30	20 55	04 23	20 52
16	E	Bull's Eye,or						21 06		
17	FE	Aldebaran,	WHEN PERSONNELS AND	THE RESERVE AND ADDRESS OF	A Comment		A TORNESS OF THE PERSONS	1	Description of the Control of	
18	G.	1 2 7 1						21 17		21,35
19	A	Sunrise 8.						21 28 21 38		
20	B	Summe o.	00 11	21 67	08 47	21 50	08 42	21 48	00 27	11 45
21	C	grap • 1 2500	CONTRACTOR OF STREET		The company of the last	bonness seemen	Burger and a second	AND DESCRIPTION OF THE PERSON NAMED IN	10	自2000年至 100年
1000	D	Le College	THE REPORT OF THE PARTY.	T. 2027 BL 2022 BL AND SERVE	09 58		9 43	21 57	10 29	22 03
23	E	000 1	12 14	32 16	12 00	22 00	10 44	22 06		TEXT 725 2003
24	F	Capella			12 00			22 14	\$16-67-92-92-92-92-92-92-92-92-92-92-92-92-92-	22 20
25	G	Gapella, or	SHAPE CONTRACTOR	CHARLEST STATE	13 00	40.00		The second secon	13 32	12 20
26	1200	Orion's Left			14 01	CONTRACTOR OF THE PARTY OF THE	CONTRACTOR AND ADDRESS OF THE PARTY OF THE P	THE RESERVE OF THE PARTY OF THE	14 33	22 35
27	n	Foot.			15 02	22 39	14 48	22 37	15 34	29, 43
28	S SECTION	End of Bulls Horn.	10 13	22 47					SHIP WALLES WITH THE	22 48
2000	-		17 19	THE PERSON NAMED IN	a property of	22 52	10 50	CONTRACTOR SECTION		22 54
29		Andr. Ap.		22 5	18 00	12.57	17 51	22 56	18 37	23 00
30	1		19 22	23 0	100	23 02	18 52	23 01	19 38	23 05
_	1	In the second second	1	1	100	-	of the particular of			

360	De	cember	hath	XXX	I Day	S		
							Leap-Y	TO SERVE
Re mirkeli	Mary Control of the C					1723.		17:14
thing of lars	Opla.	⊙dec.	Opla	Odec.	Opla.	@dec-	⊙ pla:	Odec.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D.M.			DI M	British Street		D. M.	
r F First in Ori	7.	South.	STYNEST LINES	South.		South.	20 39	South
2 Gon's Belt.	21 24	23 12	21 09	23 11	20 94	23 10	21 40	
3 A Last in Ori		THE RESERVE OF THE PARTY OF THE	THE WAS DEVICED BY A STATE OF THE	Carlotte Street Contract Contract	1 S. N. L. (1752/1988) (178)	23 14	22 41	32 20
S Corion's right	-	23 22		-			24 44	COLUMN STREET
6 D Shoulder, &	25 28	23 24	STATE OF THE SEC. OF	23 24	FERENCE STREET	SENIOR SERVICES		23 25
8 Frightshould	A CONTRACTOR OF THE PARTY OF TH	29 28	St. 2005(8), 3,270,78		27 CI	ST. CHARLES	37 47	23 28
796	28 32	23 29		23 28	数据(D. 35-1495)	APP 1993年至18	ESCHOLOS CONTRACTOR	23 29
B Sol in Capr	VS. 34	23 29		23 29	PERSONAL STATE	Control of the Contro	29 49 VS. 50	Alberta March Carlos
12 C Sun r. 8, 12	2000	7/1/23	C1125 E 327A	23 2			01 52	23 28
D Foot of the Egreat Dog.	02 27	1 5 5 6 5 7 6	E 10 00 00 000	A MARKET TO S	02 0	23 27	02 53	23 27
Fof Gemini.	04 3	Sec. 1989	104 2	23 2	504 0	23 25		23 24
16 G	06 4	-	06 20		-	1 23 20	06 57	23 21
18 B Mouth ofth	E 07 4	2 23 10	5 07 2	7 23 1	607 1	2 2 3 1	07 55	23 15
great Dog, or Syrius.	08 4	ad Eliferic School State		8 23 1		All the San School of the	10 01	23 11
EThe Apol	ale such	-	E PASSAGE		-	-		23 01
22 F	11 4	7 22 5	8 11 3	2 22 5	0111	723 0	12 03	
23 G 24 A	13 4			CALL DESCRIPTION OF STREET	10 C 20 T 0 STO	922 4		AN CONTRACTOR
BNat. Ghri			to the second		10000000000000000000000000000000000000	1 22 4	175 275000	12 37
26 CSr. Stephen	11. 15 5	2 2 2 3	5 16 3	722 3	DE DURAGOS - 700		817 0	CONTRACTOR AND ADDRESS OF THE
28 E Innocent	CARL ST. HALL PART TO SELECT	4 22 T	7 17 3	9 22 1	9 17 2	A	12 12 On 12	22 15
30 Grhigh Pollo			918 4		ESS CONTRACTORS	5 22 I 7 22 O	SPACE STORE	222 06
E A	20 5	721 5		2 21 5	图 一些一定一种	8 21 5		121 48

An Explanation of the precedent Kalendar.

N each Page there are eleven Columns; the first sheweth the Day of the Month; the second, the Days of the Week expressed by the Week-day Letters, as in the Year 1713, in the Month of April, you will find C for Saturday, and D for Sunday, which is the Dominical Letter, for that Year, (as you fee in the Page before the Kalendar.) The Third Column sheweth some remarkable Days, and the Southing of leveral Stars at Midnight, with their Declinations from the Equinoctial; as in the aforesaid Month, you will find against the fourth day, there stands the Last in the Great Bear's Tail, which shews that the faid Siar comes to the Meridian the fourth day, at twelve of the Clock at Midnight. The fourth Column the weak the Place of the Sun for the first Year after Leap Year, (according to Mr. Flamffeed's Tables;) as against the third of April, you will find the Sun to be in 24° 17' of Arter. The fifth Column theweth the Declination of the Sun, for the fifth Year after Leap Year; as against the third day aforesaid, you will find the Sun's Declination to be 9° 26'. And after the same manner the other six Columns are to be used; as against the said third day of April, you will find in the fixth Column, in the second Year after Leap-Year, that the Sun's Declination to be 9° 21'; and in the eight Column, and in the Third Year after Leap-Year, the Sun's Place is 23 49 in Aries; and in the ninth Column, the Declination of the Sun is 90 15'; and in the tenth Column, in the Leap-Year, the Sun's Place is 24° 33' in Aries; and in the eleventh Column, the Sun's Declination is 9° 32'

How to find the Day of the Month, or Week-Day, for any Time past or to some, by the precedent Kalendar.

First you may find the Dominical Letter by the Table before the Kalendar, or else by the Rule delivered in Chap. 8. Selt. 3. and thereby you may discover the Day of the Month, as follows.

Ex. What Day of the Month was the first Monday in August, in the Year 1843?

By the former Rule you will find the Dominical Letter was E; then turning to the Month of August, eall E Sunday, and the F that follows is Monday, and the first Monday, is the 4th Day of the Month.

Ex. What Day of the Week will the tenth of February be in the Year 1708.

This Year will be Leap-Year, and in the Table hath two Dominical Letters D and C; the first of them serving from the first of Januar, till the a5th of February and the other from thence to the Year's end: Therefore against the 10th of February stands E; then calling D Sunday, E is Monday, and F is Tuesday, the Week Day sought.

Ex. What Day of the Month is the second Thursday in the Month of Abbust, in the

The Dominical Letter for the latter part of the Year's C, therefore C francis for Sunday, D for Monday, E for Tuesday, F for Wednesday, G for Thursday; and against the second G in August, is the 12th Day of the Month, which was required.

Kk 2

A Table of the Variation of the Sun's Declination, to be applied for Years to come, according to the Title on the Right-hand; but for Years past, contrarily.

Month D	acceptable with	in.	1	0.10			1.10			A 21-0	17					Asset,	
Month D.	Vears.	104	108	12	116	20	124	128	132	136	40	144	148	152	136	160	1
11 00 01 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 16 11 01 01 01 01 02 03 03 04 04 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 01 01 01 01 01 01	Month D.		T	T	Z	7	7	7	7	17	7	17	7	17	1	1	2 10 4
11 00 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 01 01 01 02 02 03 03 04 04 05 06 06 07 07 08 08 09 10 10 10 01 02 03 03 04 04 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 01 01 01 01 01 02 02 03 03 04 04 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 01 01 01 01 01 01	Fanuary I	00	01	01	01	01	02	02	02	03	02	02	1	03	1		12005
21 90 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 99 16 11 March, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 16 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 21 00 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 21 00 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 3une, 1 00 00 00 01 01 01 01 01 01 01 01 01 0	SECOND CONTRACTOR OF THE PROPERTY OF THE PROPE	00	10	10	01	9 9 9 1 1		S DESCRIPTION	P (1657)	3 (600.05)	117,000,000	30 PS/8075	BEET,	8 S1885s	60 BOOKSON	A 100003.48	Morth.
Solution	21	00	0.1	OI	02	02	03	in interiored	PRECIO	9 90500		S COST	3 (Cont.)	1163	3 50 50	8 S.DEE	
11	February, I	01	01	02	02	03	03		3 3 200	(Carross	A DESCRIPTION	A CONTRACT	100	-	3 3 3 3 4	-	303-105
March, 1 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 21 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 April, 1 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 02 03 03 04 04 05 06 06 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 06 06 07 08 08 09 10 11 00 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 May, 1 00 01 01 02 02 02 03 03 04 04 05 05 06 06 07 07 08 08 21 00 01 01 02 02 02 03 03 04 04 05 05 06 06 07 07 08 08 21 00 01 01 01 01 01 01 01 01 01 01 01 01	THE TOTAL PROPERTY OF THE PROP	OI	01	02	03	S March 19	S SOURCE	Philips To	BI (355/44)	100	48.79(95)	61700	A POSS	제4221조	N N SOLD	100	
March, 1 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 21 01 01 01 02 02 03 03 04 04 05 06 06 07 08 08 09 10 11 11 01 01 01 02 02 03 03 04 04 05 06 06 07 07 08 09 10 11 11 01 01 01 01 01 01 01 01 01 01	0 21	01	01	02	03	03	04	05	05	06	07	08	08	S PS 1889	0 (30 F)		(seeles
11	March, 1	01	01	02	03	04	04	05	06	06	07	08	08	Fig.	0.733	177	TAMES OF
April, I 01 01 02 03 03 04 05 05 06 07 07 08 08 09 10 10 10 01 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 01 01 01 01 02 02 02 02 02 03 03 04 04 05 05 06 06 07 07 08 08 08 09 10 11 00 01 01 01 01 01 01 01 01 01 01	11	10	01	02	TO SEC	04	04	05	1000 110	A POSSESSION	07	08	09	Salar C	8 8000	Bar.	1 953
11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 02 02 02 03 03 04 04 05 05 06 06 07 07 08 08 08 08 09 10 01 02 02 02 03 03 04 04 05 05 06 06 07 07 07 08 08 08 09 10 01 01 02 02 02 03 03 04 04 04 05 05 05 06 06 07 07 07 08 08 08 09 10 01 01 01 01 01 01 01 01 01 01 01 01	2.1	1	01	02	03	10000	04	05	06	06	07	08	08	09	10	11	The Audit
11	April, 1	OI	01	02	S SSEED	03	04	05	05	06	07	07	08	09	10	10	
May, 1 1 00 01 01 02 02 02 03 03 04 04 05 05 06 06 07 07 07 08 09 10 11 01 01 02 03 03 04 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 01 01 01 01 01 01 01 01	建设设施的基础的设施的	THE E	1000	8 (8)650	III MORES	8 (425kg	a dicebba	04	(4 CSL-7-25)	STEEDER!	06	07	08	08	09	PES	130
11 00 01 01 01 02 02 02 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 01 02 03 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 01 01 02 03 03 03 04 04 05 05 06 06 07 08 08 09 10 11 01 01 01 01 01 01 01 01 01 01 01	21	01	01	02	02	03	03	04	05	05	06	06	07	07	08	08	-
21	May, SHE I	4 4 5 5	1989	1000	16360	3 45,086	2.000 mil	1.339	200	0.00000	05	105	06	,06	07	07	S. African
June, 1 00 00 00 01 01 01 01 01 01 01 01 02 02 02 02 02 02 02 02 02 02 00 00 00	11	1555				2000	() ()	100.3		A Miner Li	10 (CE) (CE)	100 100 100 100 100 100 100 100 100 100	05	05	05	06	W ADJECT
11 00 00 00 00 00 00 00 00 00 00 00 00 0	21	-	1-	1		-	-	1	1	02	03	03	03	03	04	04	
21	June, 1			1202	1 3 6 3		60.00	A 17 TO 2010	1000000		143257	10	02	02	02	02	South.
3uly, 1 00 01 01 02 02 02 02 02 02 03 03 03 03 03 04 04 04 05 05 05 06 06 07 07 08 09 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 01 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 04 05 05 05 06 06 07 08 08 09 10 01 01 01 01 01 01 01 01 01 01 01 01	是你就是这种"这一个"		\$ C.75				1 2 20	4 日本	1200		100	3.3.14	00	00	C2575	00	
11 00 01 01 02 02 03 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 ORiobar, 1 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 ORiobar, 1 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 10 11 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 ORiobar, 1 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 03 03 04 04 05 06 06 06 07 08 08 09 10 10	SA DESCRIPTION OF THE PARTY OF		-	1000	100		_	9 7 9 7 7 19 2	-	-	-	-	02	02	02	02	
21 00 01 02 02 02 03 04 05 05 06 06 07 08 08 09 10 11 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 07 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 07 08 09 10 10 10 01 01 02 03 03 04 04 05 05 06 06 07 07 08 09 10 10 10 01 01 01 02 03 03 04 04 05 05 06 06 07 07 08 09 10 10 10 01 01 01 02 03 03 04 04 05 05 06 06 07 07 08 09 10 10 10 01 01 01 02 03 03 04 04 05 05 05 06 06 07 07 08 09 10 10 10 01 01 01 02 03 03 04 04 05 05 05 06 06 07 07 08 09 10 10 10 01 01 01 01 02 03 03 04 04 05 05 05 06 06 07 07 08 09 10 10 10 01 01 01 01 01 01 01 01 01 01		A COL	100	2 (0.95)	7 1590		12502370	1 (827)2.500	455,200	SI DESE	0.00360	0 00/356	03	3 6 7 7 7 7	04	04	San Hill
August, 1 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 11 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 08 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 02 03 03 04 04 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 02 03 03 04 04 05 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 02 03 03 04 04 05 05 05 06 06 07 07 08 08 09 10 10 10 01 01 01 01 01 01 01 01 01 01		P. Bank	1000	44150	in the state of	g 800m	0.000	1 FOR 2	18 1. Santo	O STORY	122 3	STATE OF	100		13 24	0.00	Verilla.
11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 01 02 03 03 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 10 01 01 01 02 03 03 04 05 05 06 06 07 08 08 09 10 01 01 01 01 02 03 03 04 05 05 06 06 06 07 07 08 08 09 10 01 01 01 01 02 02 03 03 04 05 05 06 06 06 07 07 08 08 09 10 01 01 01 01 02 02 03 03 04 05 05 06 06 06 07 07 08 08 09	N. Company of the Com	-	-	-	1 -	-	1000	-	-		100	1	100	1 74.	-	197	* V361 d
21 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 11 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 21 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 21 01 01 02 03 04 04 05 06 06 07 08 09 09 10 11 ORobot, 1 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 11 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 21 01 01 02 02 03 03 04 04 05 06 06 07 08 08 09 10	即用的通用或可以可以 (1)	1000	40.0	12723	n ne sa	8000	12000	10000	AN POST	100000	3 2 32	17.357.65	THE REAL PROPERTY.	995623	10.00	339.50	ATT WITH
September, I ol ol o2 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo ll 11 ol ol o2 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo ll 21 ol ol o2 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo ll ORober, I ol ol o2 o3 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo ll 11 ol ol o2 o3 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo ll 11 ol ol o2 o3 o3 o4 o4 o5 o6 o6 o7 o8 o9 o9 lo 21 ol ol o2 o3 o3 o4 o4 o5 o6 o6 o7 o8 o8 o9 lo 21 ol ol o2 o3 o3 o4 o4 o5 o6 o6 o7 o8 o8 o9 lo	put the section from	1000	6000	100000	12.5	8 R 9 650	100000	10000	g attended	FR0200	Q 653 836	Service Control	1000	1000	10.5524	2500	
11 01 01 02 03 04 04 05 06 06 07 08 09 09 16 11 01 01 01 02 03 03 04 04 05 05 06 06 07 08 09 09 10 11 01 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 10 01 01 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 02 02 03 03 04 04 05 05 06 06 07 08 08 09 10 01 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 10 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 10 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 10 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 10 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09	THE RESERVE OF THE PARTY OF THE	0.7	-	02	-	-	THE COURSE		177		-	1000	1000000	State of the last	-	2000	Smith 3
21 01 01 02 03 04 04 05 06 06 07 08 09 10 11 01 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 21 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 10 01 02 02 03 03 04 04 05 06 06 07 08 08 09 10 10 01 02 02 03 03 04 05 05 06 06 07 07 08 09 10 10 10 10 02 02 03 03 04 05 05 06 06 07 07 08 09 10 10 10 10 10 10 10 10 10 10 10 10 10	国际从中国国际部门的公司		2300	1228	\$300 mod	668656	A STREET	0.00000	17043	100 M	1.00	19-1903	13.055	100	32.23	1130	briogs St
Official 01 01 02 03 03 04 05 05 06 07 08 08 09 10 10 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 10 21 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 10 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09	显现在被影响为是最后的	01		02	District Co.	43.43	12272	All Global Co.		100000	USA.	11:59.963670	SE 350	1202	CONN	1 64	STO ME
21 01 01 02 03 03 04 04 05 06 06 07 08 08 09 10 21 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09 09 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09 09		01	01	02	Contract of	1000	A STREET	-	-	200	and the latest to	-		3553	Part Con	-	NI-C
21 01 01 02 02 03 03 04 05 05 06 06 07 07 08 09	October, 1	200	10	100	网络 总	100000	3000	Sales and	522.63	2235	0.338	2508	125512400	100	John .	100	Object
November, 1 00 01 01 02 02 03 03 04 04 05 05 06 06 07 07	Compared to the	OI	01	02	Market B	02	02	150 957	05	05		06	07	07	93023	- 4-1	Le sela bi
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Nonember	00	01	01	02	02	03	02	04	04	0.	05	06	06	-	~	14 11 11
11 00 01 01 02 02 02 03 03 03 04 04 05 05 05 06	11	00	10	01		02	02	03	03	03	04		05		05	06	2029
11 00 01 01 02 02 03 03 03 04 04 05 05 05 06 21 00 01 01 01 01 01 01 01 01 01 01 01 01	21		01	10		01	02		02	02	03	03			04	N 700 1 F 10 1 B	
Desember, 1 00 00 00 01 01 01 01 01 01 01 01 01 0	Desember	Samuel St.	00	00	01	01	10	10	10	01	01	02	02	02		07	13
11 00 00 00 00 00 00 00 00 00 00 00 00 0	11	BEST S	80694	00	.00	00	00				00	00	00	00	00	Charles and the second	up and
11 00 00 00 00 00 00 00 00 00 00 00 00 0	21	•0	00	00	01	10	01	01	10	10	01	02	02	02	02	02	A ALLEN

ditos

A Table of the Variation of the Sun's Declination in Hours.

17 10 VIN 36	LATER TO THE COL	23. 化肥皂的5.05
Dours, from	the Meridian	of London.

Diurn. Variat.	D.	D.	D.	D.	D.	D.	D.	D.	D.	D.	D.	14
min.	m.	m.	m.	m	m.	m.] m.	m.	m.	m.	m.	l m
2	00	00	.00	00	00	00	OI	01	01	01	01	1 =
3	00	00	00	00	OI	or	01	oı	01	OI	01	0
4	00	00	00	01	01	10	or	01	oi	02	02	53236
. 5	00	00	.01	01	01	OI	01	, 02,	02	02	02	0
110 6	00	00	OI	ot.	OI	OL	02	102	02	02	3 1971	2
7	00	OI	01	OI	01	02	02	03	SEMENT SE	03	03	0
8	00	01	01	OI	02	02	02	03	03	03	04	0
9	00	01	01	OI	02	02	03	03	03	A STEELED A	04	0,
FOA	00.	01	01	02	02	02	The state of the s	100 men 100 miles	_	04	Marine	0
341 1	00	01	OI	02	92	Mary July 1	03,	03	04	94	.05	-0
12	00	01	91	02	02	03	03	104	04	05	05	0
13	OI	01	02	02	03	03	03	04	04	05	05:	0
1000	-		637.0	-		03	04	04	25	05	06	0
14	OI	01	02	02	03	03	94	05	05	06	06	0
15	01	01	02	02	03	94	04	05	06	06	97	0
16	01	01	02	03	03	04	02	05	06	07	97	08
117	10	01	02	03	041	04	05	06	06	07	08	08
18	01	10	02	03	04	04	05	06	07	07	08	00
19	01	02	02	03	04	05	06	06	07.	08	09	0.0000000000000000000000000000000000000
20	10	02	02	03	04	05	06	06	07	08	09	- 09
21	OI	02	02	03.	04	05	06	07	08	09	10	10
22	10	02	03	04	05	05	96	07	08	Contract of the	119.00	11
23	IO	02	03	04	05	06	07	08	NE PREMIE	09	Io	心性觀
24	OI	02	03	04	05	06	07	08	09	10	TI	11

Exam-

Examples of the Use of the foregoing Tables, for the Sun's Declination 2 7 19 3 1 Ofor Vear's to come, 8te.

Example, 1. Suppose the Sun's Declination be required on the 21st of May, in the

Year 1715, being the third after the Leap Tear,-

In the Month of May, in the First Colmmn, look the Day of the Month 21, and under the Third Tear, in the Column of @ Der. over against the 21st Day, you will find 22° 01' Northerly, the Sun's Declination that Day at Noon, for the Meridian of London

Example 2. Anno 1728, Septemb. 1. I would know the Sun's Declination: from 1728, rejecting the Hundreds and Scores, I divide the Refidue, which is 8, by 4, the Remainder o thews it is a Leap-Year, under which Title, I find 4 6' North. Then from 1728, I Subtract 1720, refts 8 Years; under which; against Sept. 1. (In the Pable of Variation in Years) I find the Variation 1' South; which subtracted from the afore-found Declination 4° 6' North, refts 4° 5' North, the true Declinarion of the Sun.

And here note, That when the Declination and Variation are both North, or both South, their Sum is the true Declination; but if the one be North, and the other

South, lit is their Difference.

For the Declination of the Sun out of the Meridian of London.

Anni 1717, April 14, at fix of the Clock Afreshood Fwould know the Sun's Declination. The 12th day at Noon, I find it in the Kalendar 12" 13', North; and the 12 day 12 33; therefore subtracting the leffer Declination 12 19 our of the greater, 12° 33', the Relidue 20' is the daily Encrease. Then in the Table of Varia ation in Hours, Se. under 6 Hours or 90° in the Head, and against 20' on the left hand. I find s'the proportional Part; which (because the Hour was Asternoon, and the Declination engreasing) added to the afore found 12° 137, the Sum is 12° 18' 30 70

North the Declination.

Examp. For the Declination of the Sun, Anno 1771, Offeb. 28, at 8 in the Morning; that is a Hours reckoned backward from Noon, In the Kalendar, the Declination on Octab. 18. that Year, is 16 29, and on the 27th day 16° 12! South, the Difference is 17'; against which, under 4 Hours, or 60° in the Table of Variation in Hours Sc. I find the proportional Part 3/; which (in this Example) Subtracted from 16° 29, the remaining 16° 26' South, the Declination lought And thus may the true Declination of the Sun be easily found at all simes, and in all Meridians, of which I suppose here will need no more Examples. The Sun's Horizonal Parallax is only is Seconds, therefore the Parallax need not to be applied at all. Alfo the Sun's Refraction is demonstratively equal to that of the Fixed Stars; which latter is by the Observation of Tycho Brahe, in the Horizon 30', and is o' in 20° of Altitude. Vid. Chap. 8. Seff. I.

TRAVERSE TABLE:

0 R,

A TABLE of Difference of Latitude and Departure to every Point and Quarter-Point of the Compass:

With the Use thereof in Working of a Traverse, and keeping a Sea-Reckoning.

Dep Lite and a self-one good

The state of Polari by Chart of the Principle

1255	25		(Sept.		1	Cat	ole o	E	rtfer	ence			4	
	0	110	int		oitt	3 P	oint	SURFIELD IN	oint	1 4	Point	1 1/2	Point	D
A	15	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Der-	25
		0.99	.05	.99	.10	.99	.15	.98	.20	.97	.24	.95	•29	. 1
	2	1,99	10	1.99	.20	2.07	.2)	1.95	•39	2.91	. 49	1.91	•5	2
	3	3.99	.20	3.98	-39	3.96	-14	3.92	-59 -78	3.88	. 97	3.83	1.16	3
- CO 1 240	4	4.99	-24	4.98	-49	4.95	.73	4.90	.98	4.85	1.27	4.79	1.46	5
	6	1.99	.29	6 97	-59	5.94	.88	5.89	1.17	5.82	1.45	5.74	1.74	6
	7	6.99	• .34	7.56	.69	6.92	1.03	6.87	1.37	6.79	1.70	1.70	2.03	7.
	8	7.99	•39	8.96	.78	7 91	A:17	7.85	1.76	7.76 8.73	2.19	8.62	2.32	107,100,00
	10	9.59	.49	9.95	.98	989	1.47	9.81	1.95	9.70	24,	9.57	2.01	9
	1	10.58	-54	10.94	1.08	10.88	1.62	10.79	2.15	10.67	2.57	10.53	3.19	i
AP . 45	Tib	11138	84	1 494	- Billion	11.87	To be seen a	N1.70	2.31	11.47	72.92	11.486	3.48	12
0.1	江	12.8	C 64	1 40 40	1 27	12.86	2.05	12.76	2.54	12.6	3.19	12.44	3.71	13
	14	13.98	.73	14.93	A STATE OF THE PARTY OF THE PAR	14.84		13.73	2.73	13.58	3.45	13.40	4.06	14
	16	15.98		15.92	The same	15.83	0.000		3412	15.52	3.89	15.31	4.61	16
	17	16.98	.83	10.92	and the same of the	15.81	2,50	16.68	3.32	16.49	4.13	16.27	4.93	17
	18	17.98	.88	17.91		17.80		CORNEL CONTRACTOR	3.57	17-46	4.37	17.23	5.22	18
	19	18.98		19.40	The Street of th	19.78		18.64	3.71	18.43	4.62	19.14	5.81	19
	20	-	-	20.89	OF AND CHARGOS	20.77	STATE OF THE PARTY OF	20.60	4.10		5.10	20.10	6.10	20
ba	21 22	20.97		21.89	2.16	2100	1 2120		4.29	20.37	5-35	21.05	6.39	22
	7 23	22.07	1,13	22.0		22.75	3.37	22.56	4.49	22.31	5.59	22.01	6.68	23
-19		23.97				23C/ 21.7	3. 2 2 KZ	13:52	4.68 94.881	23.28	5.83	22,92	6.7,	24
	ST STREET,	24.47	S Comments	2 8		-	The Other	STATE OF THE PARTY.	L PROPERTY OF	24-25	00,08	23.93	37.27	25
La Carrier	1 27	25.97	1.27	26.47	2.65	25.72	TOTAL DESIGNATION	25.51	5,07	25.22	6.32	24.88	7.84	26
	28	27.97	1.37	27.05		27.69	4.10	7.47	5.45	27.16	6.80	26.80	0,13	27 28
	29	28.97	1.42	20.09		25.68		28.45	5.66	28.13	7.05	27.76	8.42	29
	30	29.93	1.47	30.84	-	29.67	-	29.42	5.85	29.10	7.29	28.71	8.71	30
5	31	30.95		1 21 87		30.66	4.55	30.40	6.05	30.07	7.53	29.57	9.00	. 31
D fi	6 32	31.95	Co. Children Co. Co.	32.84	3.8	32.5		31.38	6.44	31.04	3.02	31.58	9.29	32
	34	33.95	at the same of	134.03	神神時	33.63		33-34	-6,63	133.8	8.25	32.54	9.87	34
68	3	34.95	1.71	34.8	the second	34462	, a cold beautiful contract	34.32		34.95	7.51	33.50	10.17	35
	36	20-73		35.82	3.53	35.64		35.31	7.02	35.92	8.75	34-45	10.45	36
	37	36.95		37.8	1 3.72	37.58		36.25	7.41	36.89	8.99	35.41	11.03	37
	35			. 130.5	3.82	38.57	5.72	38.25		38.83	9.48	37.33	11.32	39
The same	40	39.95		39.8	3.92	39.5/	The second second	39.23		39.80	9.72	38.23	11.51	40
	41		2.01			O STATE OF THE PARTY NAMED IN	A COMPANY STREET, SALES	40.21	8.00	39-77	9.95	39.24	11.90	41
	41	SEC SECURITY OF	2.00	44 9		41.55		41.19	1 (7)	40.74	10.21	40.19	12.19	42
	4					43.53	6.46	42.17	8.58	41.71	10.69	42.11	12.48	41
	4	44.0		44.7	9 4.41	44.52	6.60	44.13		43.65	10.94		13.07	45
	4	45.94	2.2		4.51	45.51		45.12	8.97	44.62	11.18	44.02	13-35	46
10 March	4	40.9	1 2.30	46.7	4.70	46.49		46.10	9-17	45.59		44.98	13.64	- 47
	4		2.3	47:7	7 4.80	48.47	7.19	47.08		46.56			13.93	48
2 2000	9			49.7				49.04		47.53	T1.15		14.51	50
		Oep.	All commences and the		Lat.	Dep	Lat.		Lat.	Dep.	Lat.	Dep.	Lat.	
		100	Point	Mr. Decument	MARKET SERVICE		Point	-	oint	6 3	A Maria Control	6 4	Point	
Charles Carlot	MANUSSIG	Contract of the last	A CONTRACTOR OF THE PARTY OF TH	28-18-19-1	and the said	STATE OF THE PARTY OF	The state of the	SAME DAY	000000000000000000000000000000000000000	AND REAL PROPERTY.	STATE OF THE PARTY		Mark Control	-

				Df La	títui	le an	n Zh	Mana	de la distribuição de la distrib		The state of the state of	
25 TACKETTO E P.O.	7 1	Point.	Poi	nt 3	Point	THE REAL PROPERTY.	-	pari	and the same and		25	7
	Lat.	Dep.	MANAGE STATE	ep. Lat.	Dep	Mary September 1	Dep.	Lat.	Point.	The second second	1 1	Ç,
	52 51.93	2.55	55.75	5.10 51.4	5 7.45 4 7.63	St. But Charles	9.95	49.47	Dep.	0.0	ep.	
1 5	3 28 93 4 59 93	2.65	53.74	29 53.4	3 7.78	51.98	10.15	50.44	12.84	49.76 1	5.00	51
	6 55.93	The second second second	54.74	39 54-4	1 8.07	1 23'34	10.55	52.38	13.12	51.68 1	5.67	3
5	7 56.93	2.79	56.73		8 8.27	54.93	10.94	54.32	13.37 13.61		Account of the latest of the l	5
5	9 58.93	2.89	8.72 5	78 58.3	8.51	56.89	11.13	55.29		54.55 16	.54 5	7
61	1 66.92	-		98 60.34	8.80	57.87 58.85	11.52	57.23	14-34	50.47 L7	83 5 12 5	9
63	62.92	3.04 6	1.70 6	08 61.33	0.00	59.83	10,11	59.17	14.82	3.38 17	71 6	60 E
65	62.00	3.14 6	3.69 6.	27 63.31	0.24	61.79	12.30	11.15	12.3110	9.33 18 0.29 18	00 62	
66	65.92	3.23 6	5.68 6	17 65.20	9.53	63.75	12.69	3.05	15.55 6	1.25 18. 2.21 18.	58 64	9 8
68	67.02	3.93 67	67 6	57 66.27	9.68	65.72			16.04 6	3.16 19.	16 66	2 (2)
70	68.92	3.38 68	67 6.7	6 68.25	9.97	67.68	13.27 6	5.96 1	16.52 6	1.12 19. 5.08 1y.	17. 68	
71 72	70.91		65 6.9	6 70.23	Contract Con	00.00	13.66 6	7.90 1	7:01 68	.04 20.0 .98 20.	13 60	
73	72.91	3.58 72	65 7.1	5 72.21	10.36	70.62 1	4.05 6	9.84 1	7-25 67	.94 20.6	77	
75	74.91	3.63 73. 3.67 74.			10.16	72.58 1	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7.81 1	7.74 79	.85 21.1	9 73	
76 77 78	76.01 3	3.72 75. 3.77 76.	63 7.4	75.18	11.15	74.55 1	0	1.75 18	.23 71	77 21.4		
79	77.91 3	.82 77. .87 78.	62 7.64	77.15	11.44	6.51	5.03 74	.69 118	·47 72 ·71 73			
80	0 0	.92 79.0	7.84	79.13	11.74 7	7.49 I	42 76	.63 19	20 74	64 22.64	73 1	
82	81.89 4	.02 81.	0 8.04	10	11.89 7	9.44 1	.8, 78.	57 19	44 76	56 23.22	1 60	
, 84 8	3.89 4	12 83.	0 8.13	82.10 1	2.18 8	1.401	20 80	54 10.	23 78	23.80	8i 82	
86 8	5.80 A.	21 84.5	9 8.33	84.08	2.47 8	16	39 81. 59 82.	48 20.	41 80.7	9 24.28	2	
88 8	7.80 1	20 86.5	8 8.53	86.05 1	2.62 84	1.35 16	78 82.	12 20.	01.3	5 24 68	85	
89 8	8.80 4.	26 100	THE RESERVE AND ADDRESS OF THE PARTY OF THE	88-02	2.91 86	3 17	98 84.	6 21.		6 25125	82	
91 9	0.88 4.	47 90.40	8.82	-	3.31 09		37 86. 36 87.	6 21.3 21.6 21.8 7 22.1	3 85	2 2 ms4 25.03	5	
93 9	2/88 4.	17 92.86	9.02	91.01 1	2.20 00	17.	76 88.2	7 22,1	7 86 1	200 EP 10 FM Co 10 E	3	
-95 94	.88 4.6	4 02 4	9.21	92.99 1	So 91	21 18.	95 89.2 15 90.2	1, 22.6	0 0	AND REPORT OF A SALE OF	2	
	.88 4.7	1 95.54	9.41	93.98 13	94 92	17 18.	54 921	23.0	9 09 06	27.29	33	
	.88 4.8 88 4.8	1 97.52	960	95.95 14 96 94 14	24 95	14 13.	74 00 1	23.3	91.87	27.59 20.50	25 D	
100 09	88 449	99.52	9.80	97.93 14 98.92 14	99 91 24 95 18 96 97	14 18. 12 19. 19 19.	9 90 0	23.50	外线	20.16	27	
	P. Lat.	Dep.	Lat.	Dep. L	it. De	390	3/2/2	24.30		29.04	20	
7	Point	173	Point	7 4 Pois	CARGO STATE OF THE PARTY OF	Posts		alt.	Dep			
	1					W BALL	A RETU	9		No.		

258 A Cable of Difference													
G		oint	2 P	oint	2 4	Point,	2 ±	Paint	2 4	dint	3 Pc	ios .	D
桑	Late	Dep	Lat	Dep.	Lat.	Dep.	L21,	Dep.	Late	Dep.	JLan.	Dep	DIA.
[5]	0.94	34	.92	.38	.90	.86	.88	-47	. 86	91	83	1.56	35
1-8	1.81 2.81	67	1.85	1:15	1.81	1-28	2.65	1.41	2.57	1.54	2.49	1.07	2
1 3	3.77	3.351		1,53	3.52	1.71	3.53	1.89	3.43	206	3.83	2.28	3
	4-71 5-65	185	5.54	1.01	4.52	2.14	4-41	2.36	4.29	257.	446	2.78	_2
6	6.30	2:02	6.47	2.30	6.33	2.57	6.17	2.83	6.00	2.08	5.82	3.83	3
8	7:53 8.17	2.70	7.39 8.32	3.06	7.23	3.42	7.96	3.77	O	. 63	1.65	4.44	8
10	9.42	3,03	9.24	3.44	8.14	3.85	7.94 8.52	4.71	8.5	03.	7,48	5.56	10
u	10.36	3.74	10.16	4.21	9.94	4.71	9.70	5.18	9.44	5.55	9414	6.12	11
福	12.25	4.04	11.09	4.50	10.85	5.14	10.58	5.65	10.30	6.17	9.97.	6,67	12
13			12:91	3.26	12.65	5.56	11.47	6.12	12.0	7.20	11.64	7.78	13
	14.13	5.06	13.86	5.74	13.56	6.42	13.23	2.07	12.87	7.71	12:17	8,94	15
1	0.00	5,39	14.78	6.13	14.46	6.65	14.11	7.54 8.01	13.73	8,74	13.30	8.89	16
18	16.95	5.73 6.07	16.63	6.89	16.27	7.27	15.88	8.48	14.58	9.24	14.95	19.45	18
1.9	17.89	6.40	17.56	7.27	17.18	8.13	16.76	8.95	16.30	9.77	15.29	10.56	19
20 21	19.77	7.08	19.40	8.03	18.08	8.55	17.64	9.43	18.01	10.29	16.63	Thir	20
22	20.71	7.41	20.33	8.42	19.89	9.41	1940	9.90	18.87	10.79	17.45	11.67	21-
23	21.66	7.75	21,25	8.80	20.79		20.29	10.84	19.71	11.82	19.12	12,73	23 24
125	23.54		23.10	9.18	21.70	Total Control	21.17	11.32	20.58	12.34	20.79	13.33	25
26	24.48	and the second	21.02	9:95	23.50	200	22.03	12.26	22.30	13.36	31.62	1444	26
1 27	25.42	100 100 100	24.95	10.33	24.41	FILE STATE	23.81	12.73	23.15	13.83	22.45	15.00	27
110	26.36	9.45	26.80	11.00	25.31	1	24.70	13.20	24.87	14.39	23.28	15.55	28
30	28.25	10,11	27.72	11.48		12.83	26.46	14.14	25.73	15.43	24.94	16.67	30
31	29.19	10.45	28.64	\$170,000,000,000		13.25	27.34	14.61	25.59	15.93	25.77.	17.23	3t
333	30.13	10.78	30.49	12.25		14.11	28.22	15.03	27.45	16.45	27.43	17.78	32
34	32.02	14.46	31.42	13.01	30.74	14.54	29.99	16.03	29.16	17.48	28.27.	18.89	33
35	32.96	11.80	33.34	13.78	31.04	1	30.87	16.50	30.02	17.99	29.10-	19.45	35
37	34.84	12.13	ALC: NO PERSON NAMED IN	14.16	33-45	2	31.75	17-44	31.73	18.30	30.76	20.00	36
38		12.81	35.TI	14.54	M. D. C. L. C. S.		33.52	17.91	32.59	19.53	31.59	21.11	38
40	37.66		1000		35.26	17,10			33.45	20.55	32.42	21.67	39
4	38.66	12.82		19.69	27406	17.53	26.58	119.22	33.47	21.07	34.00	22.22	45
43	39-54	14.10	38.85	16.08	37.97	17.98 18.38	37,03	19.80	36.03	21.59	34.92	23.33	42
244	41.43		39.72		39.7	18.81	37.92 38.80	20.27	34.88	22.10	35.75	23.00	444
45	42.37	19.17	41.57	17.22	40.68	19.24	39.68	21.22	38.60	23.13	37.42	24-44	45
3	43.31	19.50				19.57		21.69	39-46	23.64	38.25	25-55	46
148	45.10	19.84		18.37	43135	20.09	42.22	22.53	40.31	24.16	39:08	20.52	147 48
45	45.14	16.50	45.26	10.75	44 30	20.05	43,20	23.10	42.03		3024	27,22	49
S S	100	September 2		OF THE PARTY OF TH	45.20 Dep	1	44.10	23.57	42.89	29.71.	41.37	27. 18	50
		Lat.	100000				1		Dep.	STREET, SQUARE,	Dep.	Lan	17%
	1111	Poinc	6	COLDE	15 3	Point	1 5 2	Point.	1 5 3	Poigt	d JE	oint	1
15000	A DESCRIPTION	Total Service	EST WAR	-	de Standardon	al more in	-	and the same	-	20203570	STATE OF THE PARTY		estate a

		oint	STREET, STREET	Point	7 5	Point.	员23分别	Point.	550 P	OHIT.	IC
Dep.	Lat.	Dep-	Lat.	Dep.	Same assessment	Dep		Dep.	Lat.	Dep.	
-	-	-		1 miles	March Street, Square,				Checker 5	\$25000 villa	
The state of the s		19.91	47.01	200		A CONTRACTOR OF THE PARTY OF TH	Although the Control				5
	48.96	20.29	47.91	22.66	46.75	24.98	45-46	Committee Committee (Committee Committee Commi	THE RESERVE AND ADDRESS OF THE PARTY OF THE	29.45	2
	49.89	20.67	A STATE LAND TO	23.09	47.63	21.46	46.32	27.77	44:90	30.00	5
THE RESERVE	-	100	788.8	23.52	-	25.93	47.18	28.28	45.73	3045	5
and the same of the same	1	CONTRACTOR DATE:	\$566 D \$5.55	23.95			48.04		46.50	31:11	5
		Santal contracts	THE COLUMN TWO IS NOT THE		SHOULD SHOW		BURNEY RESERVE				5
	54.51				Control of the same of		The state of the s	The state of the			.5
49 20.21	2013	22.96	54.24	25.65	52.91	28.28	51.46	30.85			6
T26 22		23-34	55.14	26.07	53-79	28.75	52.32	31.36	-	2.00	6
	57.28	23.73	1 Table 1 Table 1	26.51	54.67	29.22	53.18	31.88	51155		6
	A PROPERTY AND A		Section 18 and 18	26.93			54.03	32.39	the second second second	7500	
TAC RESERVED	1 2		1.00		The second second			10 CH 10 CH	(25) 28 (20) (8)	10.00 100 along	6
	-		-	-		1 3 3 2 4	E. S. Appendison Co., 1	2000		THE REAL PROPERTY.	6
	61.93	25.64	ME CALL THE				1.0000000000000000000000000000000000000	AND DESCRIPTION OF SHAPE	ALC: 100 (100 (100 (100 (100 (100 (100 (100	CONTRACTOR AND	6
Carlo San Carlo		26 02	61.47	39.07	60.97		58.32	24.06	56.54	37.77	6
		26.40		29.50	60.85	32.52	59.18	35.48	57.27	28.22	_6
The second second	-	200		29.93			60.04	35			4
				30.36	62.61	33.47	60.90	36.35	Espel	3245	9
	67.44				64-28	33.94		Part (817070) (887	59.83	49.00	-7
		28.32			65.26			2000		120,120,030	7
62 25.27	14	28.70	67.80	32.07	66.14.	35.36					7
56 25.60		29.09	68:70	32.48	67.02		45 75	Section 1			27
4 1000 00		29.47	69.61	32.92	67.90.	36.30		3500			9
Talaca								MATERIAL SECTION		43-33	27
2	73.91		1 2 C			The second second	68 62			43.00	8
	-	A CONTRACTOR	-	-	-	-	-	-	-		2.
10 27.62	75.76	31.30	DESCRIPTION OF THE PROPERTY OF		And the second second	The second second	MEN AND TO SHAPE	10:000 NO. 5		45-00	8
		31.77	75:03	35.49	73.20	39.12	71.19	Charles and the second			8
	2		75:94	35.92	The state of the s			PROPERTY AND ADDRESS.	All the second second second	46.66	8,
To the said of	200	A Commence	Richard .		-	1	And in case of	43-79	70.63	47.29	8
					ATTENDED TO A STATE OF	1 P. C. T. G. S. S. S. C. S.	73.77	44.21	71.51	47-77	86
95 29.6	81.30	33.68	79.55		4		74.02	BE CONTROL OF	72-34	48.33	8
79 29.98	82.23	34 66	80.46	38.06	78.49	41.04	76.34	CONTRACTOR OF THE	3347	克莱克克克	8
	1	34.44	81.36	100000000000000000000000000000000000000	79.37	42.42	77.20		74.829	50.00	0
68 30.66	84.07	34,82	82.26		80.25	42.89	58.06			50.56	
2 30,99	85.00		83.17	39.34	8143	43.36	78.92	47.30		5	1
31 31.67	86.85	35.07	84.08		82.00	43.03	79.77	47.04	77.32	31.57	3
32.01		36.35	85.88		83.78	14.78	81.00	48 33	70.10	32,22	2.5
	88 60	36:74	86.78	-				77 TB		2070	4
33 32-0	89.62	37.12	87.60	41.47	85.54	49.72		Probable 1.46	85.40	23.33	- 1
	THE RESERVE OF THE PARTY OF THE	37.50	88.59	41.90	86 43	45.19	84,06	10.18	8F.48	54114	1
16 23 6		30.00	99		87.21	45.66	4.92	50.90	82.30	54500	1
	-		30.40		E 7	The Allenda	5.77	51.41	3.15	55556	-14
	-			Lat.	-	Lit	Dep.	Lat.	Dep!	Back	
7 Pol	G 6 P	omt	5 4 1	Point	200	为命	611	Pojut :	PAIR	200	
	7.19 17.19 17.19 17.19 17.19 17.18 17.18 18.20 17.19 18.20 18.54 18.20 18.54 19.21 19.58 19.21 19.58 19.22 20.21 20.25 20.21 20.22 21.26 20.22 22.31 22.37 24.25 26.22 22.31 23.24 25.27 24.25 26.22 27.25 28.36 27.26 27.26 28.36 28.36 28.37 29.36 2	73 17.19 47.11 96 17.52 48.96 17.86 48.96 17.86 48.96 17.86 48.96 18.54 50.81 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 18.87 51.73 19.21 52.68 19.21 55.43 20.55 56.35 20.88 54.51 20.88 54.51 20.88 54.51 20.88 54.51 20.88 54.51 20.88 54.51 20.88 54.51 20.88 56.35 20.88 56.37 20.88 60.05 14 22.23 60.97 22.21 62.82 22.91 62.82 22.91 62.82 23.92 65.59 24.25 66.52 27.2 66.35 23.92 66.52 27.2 69.29 56 23.2 66.37 68 24.93 68.37 69 23.94 70.21 25.2 70.20 26.95 70.21 26.95 70.21 27.29 74.83 26.95 73.91 26.95 73.91 26.95 73.91 27.96 76.68 28.97 76.68 29.98 82.23	79 17.19 47.11 19.52 19.61 17.52 48.04 19.91 20.29 85 18.20 49.89 20.67 79 18.54 50.81 21.05 73 18.87 51.73 21.44 66 19.21 52.68 54.51 22.57 49.20.21 55.43 22.96 61.95 56.35 22.37 32.26 22.91 60.05 24.87 22.91 60.05 24.87 22.91 62.82 25.91 22.91 62.82 25.92 28.70 70.21 29.92 28.70	02 17.19 47.11 19.52 46.10 96 17.52 48.04 19.91 47.01 91 17.86 48.96 20.29 47.91 85 18.20 49.89 20.67 48.82 79 18.54 50.81 21.05 49.72 73 18.87 51.73 21.44 50.62 66 19.21 52.68 21.82 51.53 66 1 19.55 53.58 22.20 52.43 49 20.21 55.43 22.96 54.24 43 20.55 56.35 23.34 55.14 49 20.21 55.43 22.96 54.24 43 20.55 56.35 23.34 55.14 20.88 57.28 23.73 56.05 32 21.22 58.20 24.11 56.95 22 21.56 59.13 24.49 58.76 60.97 25.26 59.66 60.57 60.97 25.26 59.66 60.8 22.57 61.90 25.64 60.57 60.8 22.57 61.90 25.64 60.57 96 23.24 63.75 26.40 62.38 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 26.79 63.28 91 23.58 64.67 27.94 65.99 62 25.27 69.29 28.70 67.80 63 24.93 68.37 28.32 66.90 64 25.27 69.29 28.70 67.80 65 25.94 71.11 29.47 69.61 68 24.93 68.37 28.32 66.90 69 25.94 71.11 29.47 69.61 68 26.61 72.99 36.23 71.42 30.25 73.91 30.62 72.32 27.29 74.83 31.00 73.22 27.29 74.83 31.00 73.22 27.29 74.83 31.00 73.22 26 27.29 74.83 31.00 73.22 27.29 74.83 31.00 73.22 28.97 79.48 32.93 77.74 08 28.97 79.48 32.93 77.74 08 28.97 79.48 32.93 77.74 08 28.97 79.48 32.93 77.74 08 28.97 79.48 32.93 77.74 08 28.97 79.48 32.92 77.74 30.32 26.95 81.30 33.68 79.55 31.67 86.85 33.59 84.98 85.99 85.09 35.59 84.98 85.99 85.09 35.59 84.98 85.99 85.09 35.59 84.98 85.99 32.31 34.44 81.36 86.78 33.49 86.98 33.31 34.44 81.36 87.77 36.35 85.88 88.69 37.12 87.96 88.69 37.12 87.	02 17.19 47.11 19.52 46.10 21.81 96 17.52 48.04 19.91 47.01 22.24 91 17.86 48.96 20.29 47.91 22.66 85 18.20 49.89 20.67 48.82 23.09 73 18.87 51.73 21.44 50.62 23.95 67 19.21 52.68 21.82 51.53 24.37 61 19.55 53.58 22.257 53.34 25.23 49 20.21 55.43 22.96 54.24 25.65 37 20.88 55.28 23.34 55.14 26.07 26.91 26.05 26.91 26.05 26.91 26.05 26.91 26.05 26.91 27.80 27.33 27.80 27.33 27.80 27.33 27.80 27.33 26.07 26.91 26.07 27.80 27.80 27.80 27.80 27.80 27.80 27.80 27.80 27.80	02 17.19 47.11 19.52 46.10 21.81 44.98 17.86 17.86 48.96 20.29 47.91 22.24 45.86 17.86 48.96 20.29 47.91 22.26 46.75 23.09 47.63 23.09 47.63 23.95 49.72 23.52 48.91 17.86 18.87 51.73 21.44 50.62 23.95 49.73 18.87 51.73 21.44 50.62 23.95 49.73 18.87 51.73 21.44 50.62 23.95 49.73 18.87 51.82 21.82 51.83 24.80 51.16 19.55 53.58 22.20 52.43 24.80 51.16 22.57 53.34 25.23 52.04 49.20.21 55.43 22.96 54.24 25.65 52.91 49.20 23.92 58.20 24.87 56.05 26.93 55.56 22.91 56.05 22.91 56.05 24.87 56.05 26.93 55.56 26.91 56.05 22.91 56.05 24.87 56.05 26.93 55.56 26.91 22.20 60.05 24.87 56.05 26.93 55.56 26.93 55.56 26.93 22.31 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 26.93 55.56 26.93 55.56 26.93 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 22.91 56.05 26.93	02 17.19 47.11 19.52 46.10 21.81 44.98 24.04 19.91 47.01 22.24 45.86 24.51 17.86 48.96 20.29 47.91 22.66 46.75 24.98 18.87 51.82 49.89 20.67 48.82 23.09 47.63 25.46 48.97 21.05 49.72 23.52 48.51 22.93 47.91 22.66 46.75 24.98 27.05 19.21 52.68 21.82 51.53 24.37 50.27 26.87 19.21 52.68 21.82 51.53 24.37 50.27 26.87 19.21 52.68 21.82 51.53 24.37 50.27 26.87 19.21 52.68 21.82 51.53 24.37 50.27 26.87 19.21 52.68 21.82 51.53 24.37 50.27 26.87 19.22 55.43 22.96 54.24 25.65 52.91 28.28 43 20.55 56.35 23.34 55.14 26.07 53.79 28.75 26.22 58.20 24.17 56.05 26.93 55.56 29.22 26.22 58.20 24.17 56.05 26.93 55.56 29.22 29.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 58.20 24.17 56.05 26.93 55.56 29.62 20.22 56.20 26.22 29.10 60.05 24.87 58.76 27.79 57.32 30.54 59.22 29.10 60.05 24.87 58.76 27.79 57.32 30.54 59.22 29.10 60.05 24.87 58.76 27.79 57.32 30.54 59.22 29.10 60.05 24.87 58.64 60.57 18.64 59.08 31.58 69.22 29.10 60.05 24.87 65.09 30.79 63.49 33.94 66.22 29.51 65.29 27.17 64.18 30.36 62.61 33.47 65.25 29.69 28.70 67.80 32.07 66.83 32.52 67.90 31.21 64.38 44.40 20.22 29.20 20.20	02 17.19 47.11 19.52 46.10 21.81 44.98 24.04 43.75 96 17.86 48.96 20.29 47.91 22.66 46.75 24.98 49.49 20.67 48.82 23.09 47.63 24.48 49.46 20.29 18.54 50.81 21.05 49.72 23.52 48.51 25.93 47.18 21.85 51.73 21.44 50.65 23.95 49.39 26.47 48.89 51.53 24.23 75.02 24.85 48.89 51.53 24.23 75.02 24.85 51.62 25.56 22.05 52.43 24.80 51.16 27.74 48.89 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 55.43 22.96 54.24 25.65 52.91 28.28 51.46 20.21 50.61	71 19 4711 19.52 46.00 21.81 44.00 24.04 43.75 26.21 17.86 85.18.20 49.89 20.77 48.82 22.00 47.53 24.46 45.75 24.98 45.46 27.25 25.81 18.80 49.89 20.77 48.82 23.09 47.63 24.46 45.72 27.77 18.87 51.73 21.44 50.82 23.09 47.63 24.46 45.22 27.77 21.85 25.28 21.82 51.33 24.37 50.27 24.87 48.89 29.41 19.55 53.58 24.20 52.43 24.80 51.16 27.34 49.75 29.82 24.37 59.20 24.25 53.18 24.57 53.58 24.20 52.43 24.80 51.16 27.34 49.75 29.82 24.37 50.08 57.28 23.33 52.04 27.81 50.61 30.34 42.25 55.43 22.96 54.42 25.65 52.91 28.28 51.43 30.85 22.57 58.20 24.80 57.28 23.75 50.05 25.43 22.95 55.43 22.96 54.42 25.65 52.91 28.28 51.46 30.85 22.57 58.20 24.5	17.19 47.11 19.52 46.10 21.81 44.63 24.04 43.75 25.21 41.40 17.52 48.04 19.91 47.01 22.24 45.86 24.51 44.61 26.74 43.23 17.86 85 18.20 49.89 20.67 48.82 23.09 47.63 21.46 46.32 27.77 44.90 18.54 50.81 21.05 49.72 23.52 48.51 22.93 47.18 28.28 45.73 18.87 51.73 11.87 52.68 21.88 51.53 24.37 50.27 24.87 48.89 29.71 47.89 28.77 48.90 20.67 48.82 23.09 47.63 21.46 46.32 27.77 44.90 67.71 18.87 51.73 11.44 20.45 21.87 50.27 24.87 48.89 29.71 47.39 48.51 19.88 54.51 22.95 52.43 24.80 51.16 27.34 49.75 29.82 48.51 19.88 54.51 22.57 53.34 22.57 53.34 22.57 53.34 22.57 53.34 22.57 53.34 25.52 52.01 28.88 51.46 30.88 49.89 49.37 20.88 54.51 25.52 52.02 47.81 50.61 30.34 48.04 27.70 48.50 20.21 55.43 22.96 54.24 25.65 52.91 28.88 51.46 30.88 49.89 49.37 20.88 57.28 23.73 56.05 26.51 54.67 29.22 58.18 31.88 51.55 22.57 50.01 22.58 60.00 24.87 56.52 56.51 50.61 30.38 49.89 49.89 20.21 55.43 20.46 57.86 27.79 57.37 28.75 53.83 31.88 51.55 22.52 52.00 20.21 55.43 20.46 57.86 27.79 57.37 28.75 53.83 31.88 51.55 22.65 20.50 20.21 22.31 50.00 24.87 58.64 57.86 27.79 57.37 30.53 55.75 33.43 57.51 22.22 56.51 50.67 20.22 58.20 31.11 56.61 33.93 52.15 51.22 50.00 24.87 50.50 50.50 30.79 60.50 50.70 30.88 30.55 55.75 33.43 57.50 50.50 30.79 60.85 32.52 59.18 35.48 57.70 57.32 50.50 50.70 30.88 30.55 57.44 22.55 57.44 27.99 30.53 55.75 33.44 50.50 57.80 30.79 60.85 32.52 59.18 35.48 57.70 57.30 57.	17.19 47.11 19.52 46.10 21.81 44.63 24.04 43.75 26.21 41.40 18.14 19.91 47.01 22.24 45.86 24.51 43.61 27.25 41.06

360	2 Cable of	Difference	
U 3 & Point	9 2 Point	3 Point	A Point
Lat. Dep.	Lat. Dep.	Lat. Dep.	Las. Dep.
1 0.80 .60	-77 -63	74 .67	71 71 1
3 2.41 1.79	1.55 1.27 2.32 1.90	1.48 1.34	1.41 2
4 3.21 2.38	3.09 2.54	2.96 2.69	283 283 4
5 4.02 2.98	3.86 3.17	3.70 3.36	368 3.53 5
6 4.82 3.57	4.64 3.81 5.41 4.44	5.19 4730	4.24 4.24 6
8 6.43 4.77	6.18 5.07	5.03 8.37	4-95 4-95 7 5-66 5-66 8
9 7.23 5.36	6.96 5.71	6.67 6.04	6.36 6.36 9
10 8.03 5.96	8.50 6.34 8.50 6.97	7-41 6.72 8.15 7.20	7.07 7.07 10
12 9.64 7.15	9.28 7.61	8.15 8.89 8.06	7.78 7.78 II 8.48 8.48 I2
19 1044 7-75 14 11.24 8.34	30 05 8.24	9.63 8.72	9.19 9.19 13
14 11.24 8.34 15 12.05 8.94	10.82 8.88	10.37 9.41	9-90 9-90 14
16 12.85 9.53	12.37 10.15	11.86 10.75	10.60 10,60 15 HAI ILAI 16
17 13.65 10.13	13.14 10.78	12.60 11.42	12.02 12.02 17
19 15.26 11.31	13.91 11.41	13.34 12.09	12.73 12.73 18
20 16.06 11.91	15.46 12.69	14.82 13.43	13.48 13,40 19 14.14 14.14 20
21 16.86 12.51	16.23 13.32	15.56 14.10	14.85 14.86 21
21 17.67 13.10 23 18.47 13.70	17.01 12.06	16.30 14.77	15.55 15.55 22
33 18.47 13.70 24 19.27 14.20	17.78 14.59	17.04 15.44	16.26 16.26 23
25 20.08 14.89	19.32 15.86	18.52 16.79	16.97 16.97 24
26 20.88 15.48	20.10 16.50	19.27 17.43	18.38 18.38 26
27 21.68 16.08 28 22.48 16.68	20.87 17.13	20.01 18.13	19.09 19.09 27
29 23.28 17.27	21.64 17.76 22.42 18.40	20.75 18.80	19.80 19.80 28
30 24.10 17.87	23.19 19.03	22.23 20.15	21.21 21.21 30
31 24.89 18.47	23.96 19.66	22.97 20.82	21.92 21.92 31
32 25.70 19.06 33 26.50 19.66	24-74 20.10	23.71 21.49	22.62 22.62 32
34 27.30 20.25	25.51 20.93 26.28 21.57	25.19 22.84	23.33 23.33 33 24.04 24.04 34
A Comment of the Comm	27.05 22.20	25.93 23.51	24.74 24.74 35
36 28.91 21.44 37 29.71 22.04	27.83 22.84	26.68 24.18	25.45 25.45 36
38 30.51 22.64	28.60 23.47 29.37 24.10	27.42 24.85 28.16 25.52	26.06 25.16 37 26.87 26.87 38
39 31.31 23.23	30.15 24-74	28.90 26.19	27:57 27:57 39
40 32.13 23.83 41 32.92 24.43	30.02 25.39	29.64 26.86	28.28 28.28 40
42 32.92 24.43 42 33.73 25.02	31.69 26.01	30.38 27.53	28.99 28.99 41
43 34-52 25.62	32.47 26.61	31.12 28.20 31.86 28.87	29.69 29.69 42 30.40 30.40 43 31.11 31.11 44 31.81 31.81 45
45 35.33 26.21	34.01 27.92	32,60 29.55	31.11 31.11 44
46 36.14 26.81	34.78 28.55	33-34 30-22	Contraction of the Contraction o
47 36.94 27.40 47 37.74 28.00	35.56 29.19 36.33 29.82	34-09 30.86	32.52 32.52 46 33.23 33.23 47
38.54 28.60	37.10 30.45	35-57 32-23	33.94 33.94 48
39-34 29-18	37.88 31.09	36.31 32.90	94.64 34.64 49
40.10 2970	38.65 31,72	37.05 33.58	35-35 35-35 50
Dep. Lat.	Dep. Lat.	Dep. Lat.	Depil Lat.
4 Point	4 Point	4 2 Point	Point

		Point			Point		2 2 1	Point		1 4 5	oint	
M	34	-		100	A DE PARTY	F Differ	Santana and		assolut	No. of the last	Sept. Sept. Co.	18
30	Lat	Dep.	A 35	Lac.	Dep.	T	Lat.	Dep.		Lat.	Dep.	1
51	40.96	30.38		39-42	32.35	3.81	37.79	34.25		36.06	36.05	51
52	41.77	30.97		40,20	32.99	A A MA	38.53	34.92	A	36.76	36.76	52
53 54	42.57	31.57		40197	33.62		40.01	35.59		37.47	37.47 38.18	53
55	44.18	32,76	4	42.51	34.89		49-75	36,94		39.88	38.88	54 55
56	44.98	33-35		43.29	35-53	HOOT E	41.50	37-61	Jan Ban	39.50	39:59	156
	45.78	33-95	all alls	44.06	36.16	Carl Salana	42.24	38-28	图 [2] [6] [6]	40.20	40.70	57
57	46.58	34.55	F-01-01	44.83	36.79	7.4.7.	42.97	30.95	A RESERVE	41.01	41,01	58
59	47.39	35.14		45.61	37.43		43.72	39.62	Del Sant	41.71	41.71	59
61	48.19	35.74	Co. 2 11/4	46.38	38.06		44.46	40.29		42.43	42.43	60
62	48.99	36.34		47.15	38.69	13.111.112	45.90	41.63	r pasa	43.14	43.14	61
63	50.60	37.53	T en	47.93	39.33	an again	46.68	42.20	int comi	44.55	43.84	62
64	51.40	38.12		49.47	40.60	trathons.	47.42	42.98	madiao	45.26	45.26	64
65	52.21	38.72	7	50.24	41.23		48.16	43.65		45.96	45.95	6
66	53.01	39.31		51.02	41.87	in de the	48.91	44.29	and one	46.67	46.67	66
67	53.81	39.91	111 6 212	31.79	42.50	The Christian	49.65	44.99	A	47-38	47.88	EQ.
69	54.62	40.51	COUPTING	52.56	43.13	Same Card	50.39	45.66		48.09	48.09	68
70	55.42	41.10	Tio sing	53.34	43.77	324454	51.87	47.01	1110 113	48.79	48.79	69
71	57.03	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	havilin	54-11	44-41	2 100	52.61	47.68	no con	49.50	49.50	79
.72	57.84	42.30	E .531	55.66	45.04	A: Sima	53-35	48.35	St Links	50.01	50.21	71
73	\$8.64	43.49	in the same	56.43	46.31	art ported	54.09	49.02		51.62	31,62	7
74	59.44	44.08		57.20	46.95	THE ST	54.83	49.70		52.33	52-33	74
75	60.25	44.68	Electric v	57.97	47.58	Louis &	55.57	50.37	atta and	53.03	53.03	Ø5
76	61.05	45.27	ราเรดิ	58.75	48.22	nd in an	56-32	51.04	E PAR	53-74	53.74	76
77	61.85	45.87		59-52	48.85	are obal	57.80	51.71	in the	54-45	54-45	36
79	63.46	47.06	1 40 200	60.29		WAS for y	58,54	53.05	A. A.	55.16	55.86	
80	64.26	47.66		61.84	St.	1.00	59.28	53.72		56.57	56.57	6.
18	65.06	48.26		62.61	51.38	138	60,02	54-39	ECHANICA TO THE	57.28	57.28	8,
82	65.87	48.85	100	163.39	52.02		60.76	55.06		57.98		8
83	66.67	49.45		64,16		the second second second	61.50	55.73		58.69	57.98 58.69	8:
85	68.28	30.04	0003	64.93		the second secon	62.24	56.41	20. 22.9	59.40	59.40	8
86	60.08	50.64	Cili Pa	65.70	-	SCOTT SATE		57.00	1.50	60.10	60.10	3
87	69.88	51.23		67.25			63.73	57.72		61.52	60.81	86
88	70.69	52.43	PI.OLDP	68.02	55.82		65.21	59.00	NII TI	62.23	61.52	8
89	71.49	53.02	the river	68.80	56.46		65.95	1 59.76	是, 为过度	62.93	62.93	8
90	72.29	53.61		69.57	57.10	10.96	66.69	60.44	1300		63.64	9
91	And the second	54.21	- 90.12	70.34	57-73		67.43	61.11		64.35	The second second	91
	73-90	54.80		78.12	58.37	1600	00:17	61.78	10 To 10 To 10	65.05	65.05	91
93	74.70	55.40	The state of	71.89	59.64		69.65	62.45		69.76	65.76	
95	76.31	55.99	The state of	73.43			70.39	63.80	B. vell	66.47	67.17	94
96	77.11	57.18	1	74.21	-		71:14	64.47	at uses	67.88		9
97	77-91	57.78	221	74.9			71.88	65.14	C 12	68.59		97
98	78.72	58.38		73.75	62.17		72.62	65.81	SPENS	69.30	69.30	0
99	70.52	54-97	- St.	76.53	62.81	100	73.36	66.48	10.000	70.00	70.00	9
100	80.32	59.57		77-30			The Section of the Local Division in the Loc	67.16		70.71	70-71	100
	Dep.	Lar;	DELIA CAR	Dep.	Lat.		Dep.	Lat.	1 200	Dep.	Lat.	1
		Point	Sec. Sec.	A	Point	de con to		Point			oint	SHALL Y
15713	100		FRE 3			And the second second	4			CENTRAL A.	5	25 19

The Use of the preceding Table of Difference of Latitude and Departure.

THIS is a large Table, giving the Difference of Latitude and Departure to any Distance not exceeding 10000, and to every Quarter-Point of the

Compais,

The Course stands at the Head and Foot of the Table; at the Head it begins at 4 Point, so ½ Point, 4 Point, increasing to 4 Points; at the Foot it begins at 4 Points, so 4½ Points, 4½ Points, increasing backwards to 7½ Points. The Difference is Placed in the two outermost Columns of each Page, under the Word Diff. on the Lest-hand Page, beginning at 1, and increasing to 50; on the Righthand Page, beginning at 51, and increasing to 100. The Difference of Latitude and Departure stands under the Course at the Head of the Table, and over the

Courte at the Foot thereof, diffinguished by the words, Lat. and Dep.

1. In this Table, if your Distance exceed not 100 Miles or Leagues, the Disference of Latitude and Departure will be given in Miles or Leagues, and 100 Paris of a Mile or League: But it may suffice, if the Disference of Latitude and Departure be taken only to Miles or Leagues, and tenth Parts of a Mile or League, with this Alfowance, that if the Parts be 16 or more, instead thereof set down two Tenths; (which is 20 hundred Parts;) if 26, or more, 3 Tenths; if 36, or more, 4 Tenths; if 46, or more, 5 Tenths; if 56, or more, 6 Tenths; if 66, or more, 7 Tenths; if 76, or more, 8 Tenths; if 86, or more, 9 Tenths; if 96, or more, then make the Miles or Leagues of Disference of Latitude or Departure, one more than they are in the Table: As for Instance, instead of 19.16, set down 19.2 Tenth; for 27.27, place 27.3; for 49.59, place 49.6; for 53.78, place 13.8; for 76.96, place 77; for 78.66, place 79 Miles or Leagues.

Difference of Latitude and Departure in Miles or Leagues, and tenth Parts, being

taken our at twice.

3. If the Distance be more than 1000, and exceeds not 10000, the Disserence of Latende and Departure is given in Miles, or Leagues, as shall be explained by

what follows.8.

This Table is very useful in the resolving these 6 Problems in Navigation following; provided, in the 5 Last Problems, the Distance either given or required not exceeds 100 Miles or Leagues.

Broblem I. The Course and Distance given; to find the Difference of Lavisude and

Example I. A Ship Sails W. S. W. & West, 50 Miles ; to find the Difference of

Loritude and the Departure.

On the Left band Page of the Table, over 6 ½ Points and right against to Miles distance, you will find over the Word Lat. 14, 51 and over Dep 47, 85; which being contracted according to the first Rule foregoing, Gews your Diff. of Lat. to the 14.1 Tenths, and your Beparine 47.8 Tenths, as was required.

Example 2. A Ship fails E. b. N. Balf East, 125 Miles : to find the Difference of

Latitude and Departure.

This must be taken out of the Table at twice, after this following manner:

To perform this, you must account a at the beginning of the Table to be 10; and 2 to be 20; 3, 30; 4. 40; 5, 50: And so 10 be 100; 11, 110; 12, 120; and 20 to be 200; 30, 300; 40, 400; 50, 500; 60, 600; 70, 700; 80,

800; 90, 900; and 100 at the end, to be 1009 10 10 20 30 100 100

According to this Direction, against 12 (which stands for 120) on the Lest-hand Page, over 7 ½ Points, stands 1.18 over Let. and 11.94 over Dep. which done, according to the second Rule before given, your Difference of Latidude is 1.18 and your Departure 119.4. Then take out the Diff. of Lat. and Dep. for the Remainder, which is 5, according to the first Rule asoregoing, and after the manner of the first Example of this Problem; so you will find the Difference of Latitude to be 0.5, and your Departure 5.0: This done, set them down, and add them together after this manner.

Dift Lat. Dep. 120-11.8-119.4 5-0.5-5.6		Dep.	at.	0.535	21 144	Dift
State of the last of the state						
125 12.3 124.4	Line.				-4	-

So that your Difference of Latitude for the whole Diffance 125 Miles is 12.3. Tenths, and your Departure 1244 Tenths.

Example 3. A Ship Sails N. W. by N. & West, 976 Miles ; to find the Difference

of Latitude, and the Departure.

m air to sailtan sail

or 6.

6,

6.

he ng

by

w-

ot

ind

iles

ich

10

e of

To

Under 3 1/4 Points, and against 97 (taken for 970) stands 77.91, and 57.78 that is the Difference of Latitude 779.1 Tenth, the Departure 577.8 Tenths; against 6 stands 4.82, and 35.7; that is, the Difference of Latitude 4.8, and on the Departure 3.6 Tenths; which added together, makes the whole Difference of Latitude 783.9, and the Departure 581.4.

Example 4. A Ship Sails N. E. by N. balf East, 7968 Miles; to find the Diffe-

rence of Latitude and Departure.

To perform this, you must account 1 at the beginning of the Table to be 100; 2, to be 200; 3, 300; 4; 400: And so to be 1000; 11 to be 1100; 12, 1200; 13, 1300; 14, 1400: So 20 to be 2000; 30, 3000; 40, 4000; 50, 5000; 60.

6000; 70, 7000; 80, 8000; 90, 9000; and 100, 10000.

According to this Direction, against, 79 (taken for 7900) and under 3 ?
Points, stands 61.07 for Miles for the Difference of Latitude, and 50.12 Miles for the Departure, according to the third Rule. Then take out the Difference of Latitude and Departure from the Remainder 68 according to the first Rule, which you shall find to be 52.6 and 43.1; so the whole Difference of Latitude is 6159.6 Miles, and the Departure 3055.1 Miles.

Problem II. The Course and Difference of Lariende being given; to find the Di-

stance and the Departure.

Example. A Ship Sails W. N. W. balf Woft, with boy Difference of Latitude be

14.5 Leagues ; to find the Distance and Departure. ...

Look over 6 2 Points the Course, in the Column of Latitude, until you find 14.5. and right against it you will find the Distance 50 Leagues, and the Departure 47.8 Leagues.

Problem III. The Course and Departure given; to find the Difference of Laritude and the Difference. Example.

ALC SUL BELL

L. Continued &

Example. A Ship faile S. W. by Si & W. until ber Departure be 47:7 Leagues; to find the Difference of Latitude, and Diff once.

Look in the Column of Departure, under 3 3 Points, until you find 47.7, and right against it you see 52. 6 Leagues for the Difference of Latitude, and 71 Leagues for the Distance.

Prob. IV. Difference of Latitude and Distance given; to find the Course and Departure.

Example. A Ship fails 50 Leagues between the South and the West, until ber Dif-

ference of Latiende be 14.5 Leagues; to find the Course and Departure.

Look over your several Columns in the Table, until right against 50, the Distance, you find 14.5 in the Column of Latitude, over the Course, which will be 6 \(\frac{1}{2}\)
Points, and in the Column of Departure you will find your Departure to be 47.8.
Problem V. The Distance and Dep. given; to find the Course and Diff. of Latitude.

Example. A Ship fails 80 Leagues North Westerly, until ber Departure be 53.7

Leagues: to find the Course and Difference of Latitude.

Look over your several Columns in the Table, until right against 80 the Distance, you find 53.7 in the Column of Departure; over it you will see 3 4 Points, or N. W. by N. 4 W. and the Difference of Latitude (in the Column of Latitude, right against 80) to be 59.3 Leagues.

Example. A Ship Sails between the North and the East, until her Difference of Latitude be 36.3 Leagues, and her Departure 51.0; to find the Course and Distance.

Look over the several Columns of Latitude and Departure, unril you find 56.3 to stand against 51.0, or nearest thereto, which will be under 3 \frac{3}{4} Points, which makes the Course N.E. by N. \frac{3}{4} E. and it stands right against 76 Leagues, which is the Distance required.

Problem VII. How to work a Traverse by the Tables of Latitude and Departure.

These Tables in the working a Traverse, are both readier and far more exact, that any inframent commonly used for that purpose.

Example. A Ship fails S. W. by S. 37', then S. by E. 39' then S. E. by S. \(\frac{1}{2} \) E. 47', then W. by N. 59', then W. t' W. 62', then S. W. \(\frac{1}{2} \) W. 17'; to find the Difference of Latitude and Departure, and the direct Course and Distance from the first Place.

Set down the several Courses and Distances, as in the following Table.

Courfe.	Dift.	North.	Sout b.	Baft.	West.
South West by South.	37	34375	30.8	Simi	20:6
South by Eaft.	39	o Lora	38.2		
S. E. by South & East.	47	T. best	36.3	29:8	A Shirt
West by North.	59	11.5	or di	3 43	57.9
W. N. W.	62	23.7	16.01	102 2 10	57.3
South West & West.	27	beh	17.1	900	20.9
	12.17	35.2	122.4	37.4	156.7
merenal Herrina	vin -	depart of	35.2	9 1019	37.4
	Diff	Lat.	87.2	Dep.	1119.3

I molder

.o.qmsz.s.

ad. Larger Large acts and ag. Re-Problem II

Then by Problem 1. Find the Difference of Latitude and Departure for those Courses and Distances severally, which place in their proper Columns, or; If the Course be North-Basterly, place the Difference of Latitude in the North Column. (under North) the Departure in the East Column, (under East :) If the Course be South-Eafterly, place the Difference of Latitude in the South Column, (noder South) and the Departure in the East Column. If the Course be North-Westerly. place the Difference of Latitude in the North Column, and Departure in the Welt Column. If the Course be South-Westerly, place the D. fference of Latitude in the South Column, and the Departure in the West Column

As for Instance; in the foregoing Table, the first Course is South West by South the Diftance 37: Because the Course is South Westerly, you must place the Difference of Latitude 30. 8 in the South Column, and the Departure 20.6 in the West.

Column, as you see in the Table.

The second Course is S. by E. the Distance 39; therefore because the Course is South-Easterly, you must place the Difference of Latitude in the South Column and the Departure in the East Column. The like is to be understood of the rest Having found the Difference of Latitude and Departure for all your feveral Courfes, and inserted them in their proper Columns, you must then add up your North South, East and West Columns, and subtract the North and South Columns the one from the other, viz. The leffer from the greater; and likewise the East and West Columns. So in the Table, the Sum of the North Column is 35.2. of the South Column 122-4, of the East Column 37.4, and of the West Column, 156.7 Subtracting the North Column from the South, the Remainder is \$7.2, the Diffe rence of Latitude Southerly; and Subtracting the East Column from the West, the Remainder 119.3, is the Departure Westerly.

Having the Difference of Latitude and Departure, you may find the Course and Distance by Prob. 6. But in this Example, because your Difference of Laritude 87.2, and your Departure, 119.3, out-run the Table, that is to fay, you can find no fuch Numbers in the Table, therefore take the half of your Difference of Latitude, which is 43.6 and the half of your Departure, which is 59.6. According to the Direction in the fixth Problem, over 4 3 Points, against 4411, in the Column of Latitude, you will find 59.4 in the Column of Departure, which are the two nearest Numbers in the Table) and in the Column of the Distance 74, which being doubled, is 148, the Distance sought. The Course is between the South and the West, because the Difference of Latitude is Southerly, and Departure Westerly.

therefore the Course is South-West + West, which was required.

But one of the Principal Ules of this Table is to determine the Difference of Longitude in Daily Reckonings, by having the two Latitudes and Departure given a which it performs with all defireable felicity. And is also very useful for the easy forming of a Sea-Reckoning or Journal, as shall be instanced in this following Ta-

ble, being a Journal from the Lizard to the Barbadoes.

A Journal of our Voyage, intended by God's Permission, from the Lizard, in the Latitude 50 deg. 00 min. North, Longitude (from the Pike of Teneriff) 12 deg. 32 min. to the Island of Barbadoes, in the Latitude 13 deg. 12. min. N. Longitude 319 deg. 40 min. The Difference of Longitude between the Lizard and Barbadoes is 52 deg. 57 min. the Course S. W. 1, Diftance 2821 min. March 22 day, 1707. The Lizard bears North, diftant 30 min.

M m

266	lbe'	w to ke	ep a Jou	enal at	Sea.
Month &	The Courl	e Dift.	Z South	Ball- We	ft- (Lar. by

22 March LiverdSouth 3c 30.0 49.30 48.11 120.0 24 17° co' S.W.by S.4W. 72 55.6 45.7 47.15 11.0 47.00 16.0 25 S.W.by South 9c 79.8 53.3 45.40 75.2 26 S.W.by South 75 65.7 43.9 44.34 62.8 27 42 37 S.W.by South 138 114.6 76.7 42.39 106.2 28 S.S.W. 2W 125 110.7 66.3 40.48 88.8 29 S.S.W. 2W 125 110.7 66.3 40.48 88.8 29 S.S.W. 2W 125 110.7 66.3 40.48 88.8 20 37 44 S.S.W. 2W 102 9c.0 16.0 37.44 22.00	Month & Latic: by Observar,	- Gorredted.	Dift. in min.	North.	South- ing min.	Eaft- ing min.	West- ing min.	Lar. by reckon, D. M.	Diff.	West Long. min.
24 17° co' S.W.by S.4W. 72 75.6 45.7 47.15 68.1 11.0 47.00 16.0 5.W. by South 96 79.8 53.8 45.40 75.2 62.8 5.W. by South 75 65.7 43.9 44.34 62.8 62.8 5.S. W. ½ W 125 110.7 66.3 40.48 88.8 88.9 S.S. W. ½ W 125 110.7 66.3 40.48 88.8 88.9 S.S. W. ½ W 10.7 66.5 27.6 39.41 36.4 30.37 44.5 S.W. ½ W 10.7 90.0 16.0 37.44 29.0 29.0 20	AND ADDRESS OF THE PARTY OF THE	CONTRACTOR OF THE PROPERTY OF THE PARTY OF T	A COLD TO THE OWNER OF		30.0		TIP IS	-	vd E	
Correction by Observ. 15.0	STATE OF STREET, STREE	Company of the Compan			79.2		79.2	48.11		120.C
S.W. by South 96 79.8 53.3 45.40 75.2 65.7 43.9 44.34 62.8 65.7 43.9 44.34 62.8 65.7 76.7 42.39 1c6.2 76.7 7	24 17° co	S.W.by S. W.	72		DOCUMENTS NOT SECURED	(1) Y 1 (1)	Committee of the committee of the	The second second	in les	68.1
26 S.W. by South 75 65.7 43.9 44.34 62.8 27 42 37 S.W. by South 138 114.6 76.7 42.39 106.2 28 S.S. W. ½ W. 125 110.7 66.3 40.48 88.8 88.8 S.S. W. ½ W. 107 90.0 18.00 38.11 62.0 20.0 April South West. 85 60.1 60.1 36.42 75.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 24.4 20.0 18.5 36.36 27.6 27.6 28.0 27.6 27.6 28.0 27.6 28.0 27.6 28.0 27.6 28.0 27.6 28.0 28.0 28.0 28.0 28.0 28.0 28.0 28.0	4			erv.	-	نك	The state of the s	-		16.0
27 42 37 S.W. by South 138 114.6 76.7 42.39 1c6.2 8 S.S.W. ½ W. 125 110.7 66.3 40.48 88,8 S.S.W. ½ W. 102 9c.0 18.00 38.11 62.0 29 Correction by Oblerv. 27.0 16.0 37.44 29.00 4 April South West 85 60.1 60.1 36.42 75.0 2	<u> </u>	CONTRACTOR OF THE PROPERTY OF	COLUMN TO SECO.	-	The same of		10000	-	111111	75.2
S. S. W. 125 S. S. W. 72 S. S. W. 72 66.5 27.6 39.41 36.4 30.37 44 S. S. W. ½ W. 107 Correction by Obierv. 27.0 April South West. 851 S. by W. ½ W. 32 30.6	NAC SULT		13	_			-	-	361	62.8
S. S. W 7 66.5 27.6 39.41 36.4 30.3 7.44 62.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75	Married Married Married States and Publishers and P			237	The second second		-		Min sale	106.2
30 37		A STATE OF THE PARTY OF THE PAR	COLUMN TO SERVICE	4	DESCRIPTION OF STATE OF	20.11	The state of the s	1 10 10 10 10 10		88,8
Correction by Obierv. 27.0 16.0 37.44 20.0 20.0 20.0 20.0 20.0 20.0 20.0 2		经验的工程的证据,是是是证明的证明的证明的是 公			7	<u>तर के</u>		The state of the s	(7.00a)	36.4
April South West 85 60.1 60.1 36.42 75.02	30 37 44			erv	4 4 A L B L .	1.51	ALCOHOL: CONT.	C	B TAN D	62.0
W. S. W. 20 7.6 18.5 36.36 24.1 24.1 34.10 South by West 120 Correct by Observ. 3.6 156.9 47.6 31.33 56.7 55.9	April	Trans. (1977)	Committee of the contract of t	100		(2744) (2744)			e much	-
S. by W. ½ W. 32 30.6 9.3 36.65 11.9 4 34 10 South by West 120 Correct. by Observ. 3.6 156.9 47.6 31.33 56.7 S. by W. ½ W. 164 156.9 47.6 31.33 56.7 S. W. by South 110 91.4 61.2 28.96 69.5 S. W. by South 122 101.4 67.8 26.25 76.2 9 24 42 South West. 116 82.0 82.0 25.03 91.0 11.0 24.43 12.0 South-West. 97 68.6 68.6 23.31 75.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	12	The second secon	Section.		KOKK ISTO	11-01-1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7	S ele - S e	75.0
34 10 South by Weft 120 Correct. by Observ. 3.6 1.7.7 34.1c 1.0 27.6 34.3c 1.0 27.6 34.3c 1.0 34.1c 1.0 35.9 35.9 36.7 34.1c 1.0 35.9 35	2	A SECURE OF THE PROPERTY OF THE PARTY OF THE	APPLICATION - NOT T			2 6 35	1		ariis !	1
Correct.by Observ. 3.6 S. by W. ½ W. 164 156.9 47.6 31.33 56.7 5. W. by South 110 8 S. W. by South 122 101.4 67.8 62.25 76.2 924 42 South West. 116 Correction by Observ. 20.6 South-West. 97 68.6 68.6 68.6 75.0 12 South-West. 114 80.6 80.6 12 82.0 82.	434 10						-	C. Company	-	-
S. by W. 1 W. 164 156.9 47.6 31.33 56.7 629 37 S. S. W. 125 115.5 47.9 29.37 55.9 56.2		Correct by Obi	erv.	3.0	14 7.7	1.0	23.4		1.0	27.9
S.W. by South 10 91.4 67.8 26.25 76.2	5	S. by W. 1 W.	164		156.9	S.111 .9	47.6	21.22	ottuve	77.1
S.W. by South 10 91.4 61.2 28.06 69.5 S.W. by South 122 101.4 67.8 26.25 76.2 924 42 South West. 116 82.0 82.0 25.03 91.0 Correction by Observ. 20.0 11.0 24.43 12.0 South-West. 97 68.6 68.6 23.3 75.0 South-West. 96 67.9 67.9 22.26 74.0 South-West. 114 80.6 80.6 21.05 88.0 South-West. 118 83.5 83.5 19.4 89.0 South-West. 118 83.5 91.4 18.40 96.2 S.W. by W. 110 61.2 91.4 18.40 96.2	16 29 1 37	S. S. W.	125	G. 6			Carried Million Street	20.27	21.020	1
8 S W. by South 122 101.4 67.8 26.25 76.2 9 24 42 South West. 116 82.0 82.0 25.03 91.0 Correction by Observ. 20.0 11.0 24.43 12.0 South West. 97 68.6 68.6 23.31 75.0 South West. 96 67.9 76.2 South West. 114 80.6 80.6 21.05 88.0 South West. 118 83.5 83.5 19.41 89.0 W. 5 W. by W. 110 61.2 91.4 18.40 96.2	7	S.W. by South	110	PARTY.	Marie Committee	2 1230 1		-		-
9 24 42 South West. 116 82.0 25.03 91.0 Correction by Observ. 20.0 11.0 24.43 12.0 South West. 97 68.6 68.6 23.31 75.0 South West. 96 67.9 1 67.9 22.26 74.0 South-West. 114 80.6 80.6 21.05 88.0 83.5 19.41 89.0 96.2 W. by W. 110 61.2 91.4 18.40 96.2	18 trund and	S W.by South	122	1. 8	-	l some	1	N. S. Coll. J. S. P.		San
Correction by Observ. 20.0 11.0 24.43 12.0 68.6 58.6 58.6 23.3 5 75.0 68.6 58.6 23.3 5 75.0 67.9 22.26 74.0 80.6 80.6 21.05 88.0 88.0 89.0 89.0 89.0 96.2	924 43					20.930	No. of Concession, Name of Street, or other party of the Concession, Name of Street, or other pa	STATE OF THE PARTY	कर्त ।	STATE OF THE
South-West. 97 68.6 68.6 23.3 75.0 75.0 67.9 22.26 74.0 74.0 80.6 21.05 88.0 88.0 88.0 89.0 89.0 89.0 96.2	9.0 STATE	The second secon	Designation	erv.	A1541 (P.E 1789)	10 83.			1000	
South West. 96 67.9 67.9 22.26 74.0 South-West. 114 80.6 80.6 21.05 88.0 South-West. 118 83.5 83.5 19.41 89.0 W. 5 W. by W. 110 61.2 91.4 18.40 96.2	16	The second secon	S. Santage	150	68.6	¥., ,?			thi of	-
South-West. 114 80.6 80.6 21.05 88.0 89.0 89.0 89.0 89.0 89.0 89.0 96.2	,D	COMMITTED BY LAND BY AND RESIDENCE STORY OF THE		ical	67.9	30 TO		STREET, STREET	e a s	SELECTION STOCKS COMMISSION
South-West 118 83.5 83.5 19.41 89.0 5 W. by W. 110 61.2 91.4 18.40 96.2	12		CARLES CO.	He	Control of the last	Legel		100000000000000000000000000000000000000	100	-
S. W. by W. 110 61.2 91.4 18.40 96.2	the late of the		150 SADOT 8	That's	83.5	gi bela		The second second	to for to	-
TW. S. W. LOVE	Fig. 1			102	Distance of the	10.4 .00			grhe	-
89.4	13 in I	W. 5. W.	91	Livi	34.8	bouts'	The second second	The second of	0: 7	

Month & Latic. by Opfervat.	The Course Corrected.	in North	ing	ing tog	Lar. by E reckon. D D. M. m	iff. Long.
1706.	12 / 12 Au	brought f	rom the	other side	18.05	. 0 1667.3
16 April.	W. S. W.	91	34.8	84:1	17.30	87.0
17	W. S. W.	84	32.1	77.6	16.58	82.0
18	W. S. W.	107	41.0	98.9	16.17	103.
19	W. S. W.	103	395	95.2	15.37	99.0
20 14 43	W. S. W.	y Observ.	44.4 10.0	107.2	14.53	111.0
21	W. by S.	[10]	21.5	107.9	DESCRIPTION OF STREET	114.
22	W. by S.	120	23.4	117.7	13.58	119.
23	W. by S.	106	20.7	104.0	13.37	108.
24	W. by S.	100	19.5		13.17	103.
25	W. by S.	120	23.4	117.7	12.54	118.
26 13. 12	W by N.	100 19.5	A A STATE OF	98.1	13.14	103.
27 28	West.	130	The second	130.0	13.12	133.
28	West.	136	STREET OF	126.0	13.12	139.0
29 13° 12	Weft.	69	restantia	690	13.12	70.1

The whole difference of Longitude is 3177.6, or 3178 min. which is

The Explanation of this Journal.

In this Journal there are eleven Columns; The first contains the Days of the Month; the second the Manth of the Year, and Latitude by Observation; the third the Course Corrected, by the allowance for Lee-way, or for the Variation of the Compass, if there be any; the fourth, the Distance sailed; the fifth, fixth, seventh and eighth, the Northing, Southing, Easting, and Westing, being the Difference of Latitude and Departure of the several Courses and Distances; the ninth, the Latitude by Dead-Reckening; the temp, the East Diff. Longitude; the eleventh, the West Diff. Longitude.

Here I would advise all that are desirous to give a good account of their Reckoning, to any that have Reason or Authority to demand it, That they keep a particular account of that which they take off the Log-Board every Day at Noon, either in the same Book where they keep their Reckoning, or else in a Book distinctive for that purpose, called a Log-Book.

M m 2

Now

Now the Manner of proceeding in this Journal, by the help of the Table of Latitude and Departure is very facile, as follows: The 22d of March at Noon, I find the Lizard to bear North, and to be distant about 10 Leagues, or 30 Miles or Minutes; therefore I am to the Southward of the Lizard 30', which 30' I place in the South Column, and that makes my Latitude 49° 30'.

The 23d day my Course is S.W. and the Distance 112, to find the Difference of Latitude and Departure by the Table of Latitude and Departure, according to Preb. 1. The Distorence of Latitude is 79.2, and the Departure 79.2: Because the Course is South-Westerly, I place the Dist. Lat. in the South Column, and my Departure in the West Column, 79, or 10 19 subtracted from 40° 30, gives the

Latitude 48º 11'.

How to find the Difference of Longitude.

To find the Difference of Longitude in the two last Columns, you have both Latitudes 48° 11', and 49° 30' (the present Latitude, and the Latitude of the Day before) and the Course S.W. by which you may find the Diff. Longitude, according to the Proportion in Chap. 6. Prob. 3. of Mercator's Sailing; saying, As Radius to the Meridienal Diff. Long. This Proportion being wrought by the Logarithms, or Gunter's Scale which may serve in this case) you will find the Diff. Longitude 120' which place in the West Column, because your Course is Westerly.

The 24th Day is wrought after the manner of the 23d, having the Course and Distance given to find the Dist. Latitude, Departure, and Dist. Longitude as was

thewed before.

How to correct your Reckming by Observation of the Latitude.

On the 24th of March, by a good Observation, I find my Latitude to be 47. whereas by my Reckoning I should be in the Lat. 47° 15', so that the difference is is more Southerly: Therefore to correct my Latitude, I place 15' in the South Column, which subtracted from 47° 15', makes my Latitude by Reckoning to agree with the Observation. To Correct your Departure, you must consider, whether the Fault may be imputed to your Course, or to your Distance : If your Course be well fleered, and you find no Current, nor any Variation of the Compais, then your distance is faulty; but if you cannot trust to the Course steered, then your best way is to correct your Latitude only, not medling with your Departure. If there be a Current, and you know which way the Current lets, and how fast, then find the Diff. Lat. and Departure of the Current, and add or subtract that Latitude and Departure to or from the Ship's Diff. Lar. and Departure, according as the Current doth further or hinder your Ship in her Courfe. But if you only by some probable Reason conjecture there is a Current, then give what allowance you think meer in D.ff. Lar. and Departure, and see if that will reform your Reckoning in your Latitude, If to, you have gueffed well; but if it will not, it is to be supposed that you are mistaken in your conjecture, or that there is some other cause of this Error in your Reckoning.

If the Compass varies (as most commonly it doth) then sinding what the Variation is, and which way it is, you must allow it in the Ship's Course. But if you cannot impute the Error to any of these, then (as I said before) the Distance is saulty; and this is that which usually makes the Difference between the Lat. observed, and the Lat. by your Reckoning: And this I take to be the Cause of the

Error this 24th day of March, and generally in this Reckoning.

Now

Now to correct your Departure and Diff. Longitude, you must add up the North, South, East and West Columns, from the Day that you correct, to the beginning of your Journal-Tables: If it be the first Correction you have made, or from the Day of Correction to the last Correction; if it be the second, third. fourth Correction, &c. then lubtract the Sums of the North and South Columns from each other, and likewise of the East and West, and say by the Rule of Proportion: As the Diff. of the North and South Columns, to the Diff. of the East and West Columns; so is the Difference between the Latitudes by Observation and Reckoning, to the Diff. in the Departure, and for the Diff, between the Lacirudes by Observation and Reckoning, to the Meridional Difference forthose Larirudes; so is the Diff. in the Departure, to the Diff. in the Longitude.

Example. The 24th day you will find the Sum of the North Column oo, the Sum of the South Column (leaving out 15', the Error) 164.8, min, and therefore their Diff. is 1648. The Sum of the East Column is oo min. of the West Column 124.9. and their Diff. 124:9 Then the Operation by the Logarithm will be.

So is the Diff. between the two Latitudes, 15.0, 1.17602 To the Difference in the Departure.

Place this 11 min, in the West Column, because the Sum of the West Column

exceeds the Sum'of the East Column.

In this Operation we neglect the Tenths of the Departure, as not to be o (Traine on C) that to the regarded.

The Operation for the Difference in the Longitude.

The two Latitudes are 47 deg. 15 min. and 47 deg. 00 min. by which in the Table of Meridional Pares you will find the Meridional Diff, Lat. 12 min. Therefore, and and south out the contract as a series of the series

As the Diff. between the two Latitudes, 15 8.82391

To the Merid. Diff. of thote Lar. 1.34242

So is the Diff. in the Departure, 11 1.04139

This 16' is placed in the West Column, because the Departure is Westerly. After the same manner are the Corrections made in this Journal on the goth of March, the 4th, the 9th, and the 20th days of April, the Error being supposed to

be in the estimate Distance.

If your Ship sail several Courses in 24 hours, you must find your Diff. Laritude and Departure, working a Traverse, according to Prob. 7. in the Use of the Table of Latitude and Departure; your Diff. Lat. will give you what Latitude the Ship is in, then have you two Latitudes, viz. the Lat. the Ship was in the day before at Noon, and the Lat. the Ship is now in, by which you may find the Meridional Diff. Lat. by the Table of Merid. Parts according to Chap. 6. Prok 1. of Mercator's Sailing. Then for your Diff. Longitude, fay the live por

As the Diff. Latitude found by the Traverse, distribute To the Diff. Latitude in Meridional Party: In holle und Los So is the Departure found by the Traverse distant the To the Diff. Longitude for that Traverse

To find the whole Diff. Longitude of the two Ports between which you thake

your Voyage. Add up the Columns of East and West diff. of Longitude, and subtract the one from the other, the Remainder reduced in degrees and minutes, is the Diff. Longirude fought.

In this Journal, the Diff. of the East and West Columns of Longitude is 3177.6. or 2178! which reduced into degrees and minutes, makes 52° 58', the D.ff. Long.

between the Lizard and the Barbadoes.

The Use of the Table of Ten Chiliads, or Ten Thousand Logarithms

1. A Ny Number given under 10000? To find the Logarithm thereof. The Lefthand Column of every Page contains Numbers increasing in their natural Order from 1 to 999. The other five Columns of each Page contains the Logarithm, of all Numbers, from 1 to 9999. These Columns on the Left-hand Page are diftinguished with the Figures, o, 1, 2, 3, 4; those on the Right-hand Page, with 5, 6, 7, 8, 9.

The Numbers in the Left-hand Column, by the supply of those Figures on the top of the other Columns, do extend to 9999, and are to be read cross both Pages.

If the Number propounded to find its Logarithms confift of one Place; as suppose, you were to find the Logarithm of (7,) look for (7) among the Figures on the top of the Columns, and right against (o) in the Left-hand Column, and under (7) you will find 0.8450980, which is the Log. of 7.

The be Number propounded confist of two Places, as (68 s) look the first Figure (6) in the Left-hand Column, and the last Figure (8) at the top of the Page; then right against (6) and under (8) you will find 1.8325089, which is the Log. of 68.

If the Number confist of three Places, as 574, look for the two first Figures (57) in the Left-hand Column, and the last Figure (4) at the top of the Page; then right against (57) and under (4) you will find 2.7589119, which is the Log. of 574.

If the Number confift of four Places, as 9499, look the three first Figures (949) in the Left-hand Column, and the last Figure (9) at the top of the Page; fo right against (949) and under (9) you will find 3.9776779, which is the Log. of 9499.

2. A Log. being given, to find the correspondent Number.

Note; If the first Figure of the given Log. be (o), the Number fought consists of one Place; if it be (1); it confifts of two Places; if it be (2) of three Places: if debe (4), of four Places.

Let the Log. be 0.9030900; this Log will be found in the first Line of the Table against (o); for if you look in the first Line, ctoffing both Pages, under (8) apon the right-hand Page, you will find the given Log, which shews that (8) is the Number fought.

Let the Log. be 1.9190781; look down the second Column of the left hard Page among those Log's, and you will find the nearest, being less than the given Log. to be 1.0000000, and the Number against it in the lest hand Column is (8); then Inole crois the Pages in the same Line against (8), and under (3) at the top of the Page, you will find the Log. given, therefore the Number sought is 83.

Let the Log. be 2.8318691; look down the fecond Column of the left-hand Page. until you find a Log, being the nearest less than the given Log, which will be 2.8260048, and the Number against it, in the left-hand Column, is 67; then look

cross

cross both Pages in the same Line against 67, and under 9 (at the top of the Page)

you will find the given Log. therefore the Number fought is 679.

Let 3.9802761 be the Log. given; look down the second Column as before, and you will find the nearest less to be 3.9800034, and the Number against it 955; and croffing the Pages, as before directed, under (6) you will have the given Log.

Therefore the Number fought is 9556.

Les the Log. given be 3.9664379; if you look in the Table, according to the former Directions, you cannot find any Log. the same with this here given; and this is commonly the Case in the Use of these Tables; but then you must find the nearest, being less than the Log. given which is 3.9664233, and the Number and swering thereto is 9256, which is the nearest in whole Numbers.

The Use of the Table of Artificial, or Logarithmical Sines, Cangents, and Setants: (ac 1) ro beille gritte

This Table contains the Logarithmical Sines, Tangent's and Secants, of sont Des gree and Minute of the Quadrant.

1. To find the Sine, Tangent, or Secant of any Degree and Minute.

If the Degree be less than 45, your Sine, Tangenr, or Secant, is found in those Columns which are distinguished by the Words (Sine) (Tang.) (Secant) at the head of the Table. see were side stolers it keep .cook

But if the Degrees exceeds 45 then your Sine, Tangent or Secant, is found in those Columns which are diffinguished by these Words (Sine) (Tang.) (Second) at env Deerce and Mingre; as function the foot of the Table.

Suppose you were to find the Log. Sine. Tangent, or Secant of 91 11! Look for 32° at the head of the Table, and upon the Left-hand Page, in the Column of Minutes, under the Leuer (M) you will find 124 and against 12', and under Sine at the head of the Table, you will find 9.7266264, which is the Log. Sine of 32 121; And against 12 and under (Tang.) you have 9.7991 569; the Law Tang. of 320 121; and against 127; and sibdet (Starm) you have 10 orgers the Line Secant of 32° 12'.

Suppose you were to find the Log. Sine, Tangent or Secant of 370 47': Look for 37 deg. at the head of the Table, and upon the right hand Page (because the Minutes exceed 30) in the Column of Min. under (M) you must look for 47 min and against 47 min. and under (Sine) at the head of the Table, you will find 9.7872317, the Sine of 37 deg. 47 min. And against 47, and under (Tang.) you will find 9.8894214, the Tang. of 37 deg. 47 min. And against 47, and under

(Secant) you will find 10.1021897, the Secant of 37 deg. 47 min.

Suppose you were to find the Log. Sine, Tangent, or Secant of 64° 15': Turn to at the Foot of the Table, and upon the right hand Page, in the Column of Minutes, over the Letter (M) look upwards for 15'; against 15', and over (Sine) ar the foot of the Table, you will find 9-9545793 the Sine 64° 15'; and again 15', and over (Tang.) you will find 10.3166443 the Tangent of 64' 15'. An against 15', and over (Secant) you will find 10.3620649, the Secant of 64' 15'.

Suppose you were to find the Log. Sine, Tangent, or Secunt of 78° 45': Turn to 78° at the foot of the Table, and upon the Left-hand Page, (because the Minntes

exceed 30) in the Column of Minutes, over (M.) look for 45, against 45, and over (Sine) you find the Sine of 78° 45' to be 9.9915739, and the Tangent in the same Line over (Tang.) to be 10.7013382; and the Secant over (Secant) to be 10.7097643.

2. A Log. Sine, Tangent, or Secant being given; to find the Degrees and Minutes.

This is but the Converse of the former; but that you may the more readily turn

to the deg, and min. required, take this brief Direction.

If it be a Sine, and the five first Figures be less than 9.8494, or a Tangent less than Radius, or 10.000000; or a Secant, and the fix first Figures less than 10.1505; then it is a Sine, Tangent, or Secant of less than 45°, and is to be sought in those Columns distinguished with (Sine) (Tang.) (Secant) at the Head of the Table; but if the Sine, Tangent, or Secant, exceed these respective Numbers, then the Degrees answering thereto are more than 45, and they are to be sound in those Columns distinguished by (Sine) (Tang.) (Secant) at the soot of the Table.

Suppose you were to find the Degree and Minute corresponding to this Sine 9.7035329: This being less than 45, I run over the Columns of Sines distinguished by (Sine)

at the top, and under 30°, and against 21', I find the given Sine.

Suppose I were to find the Degree and Minute corresponding to this Tang. 10.386293: This being greater than 45°, I run over the Columns of Tangents, distinguished by (Tang) at the foot of the Table, and over 67°, and against 39° I find the mearest less, viz. 10.3860000, and therefore the deg. and min. corresponding are 67° 39°.

1. Note; If you are to find the Sine-Complement, Tangent-Complement, or Secant-Complement of any Degree and Minute; as suppose you were to find the Sine-Complement of 39° 17', subtract 39° 17' from 90° 00', and look the Sine of the

Remainder, (ot Complement to 90°) viz. the Sine of 30° 43'.

destruction to the

2. Note, If you are to find the Sine, Tangent, or Secant of any Number of Degrees and Minutes exceeding 90; as suppose you were to find the Tangent of 127° 39' subtract 127° 39' from 180° 00' and find the Tangent of the Remainder, with the Tangent 52° 21', which is also the Tangent 127° 39', as was required.

Stage is a series of the log. The end of Secret of Secret of Spingles I would be a deposed to the series of the Secret of the series of the se

The second of the second secon

committed of the contract of the contract of the contract of the contract of

(Section) you win Andrews course, the Baraness up day, et aller

Com to the state of the Martin Commen or depth of

TABLE

OF

Logarithms,

FOR

Numbers increasing in their Natural Order from 1 to 10000.

WITH

A TABLE of Artificial SINES, TANGENTS, and SECANTS, the Radius 10.0000000; and to every Degree and Minute

OF THE

QUADRANT

Carefully Corrected.

LONDON: Printed for Richard Mount, Postern-Row on Tower-Hill. 1208.

N		ABL		C.T	0000	ichene
78	CONTRACTOR	1、感 6 遊 6	22 - 238		WEAL	ITEM INS

Name	0			2	4
C. Service		CONTRACTORS A		0.4001040	April 1997 Street
0	0,0000000	0.0000000	0.3010300	0.4771212	0.6020600
	1,0000000	1.0413927	1.0791812	1.1139433	1.1461280
2 1	1.3010300	1.3221193	1.3424227	SERVICE SERVIC	1.3802112
3	1.4774212	1.4913617	1.5051500	1.5185139	1.5314789
4	1.6020600	1.6127838	1.6232493	1.6334684	1.6434527
7	1.6989700	1.7075702	1.7160033	1.7242759	1.7323937
6	1.7781512	1.7853298	1.7923917	1.7993405	1.8061800
7	1.8450980	1.8512583	1.8573325	1.8633228	1.8692317
- 8	1.9030900	1.9084850	1.9138138	1.9190781	1.9242793
9	1.9542425	1.9590414	1.9637878	1.9684829	1.9731278
10	2.0000000	2.0043214	2.0086002	2.0128372	2.0170333
11	2.0413927	2.0453230	2.0492180	2.0530784	2.0569048
12	2.0791812	2.0827851	2.0863598	2.0899051	2.0934217
13	2.1139433	2.1172713	2.1205739	2.1238516	2.1271048
14	2.1461280	2.1492191	2:1522883	2.1553360	2.1583625
-15 x	2.1760912	2.1789769	2.1818436	2.1846914	2.1875207
16	2.2041200	2.2068259	2.2095150	2.2121876	2.2148438
17	2.2304489	2.2329961	-2.2355284	2.2380461	2.2405492
18	2.2552725	2.2576786	2.2600714	2.2624511	2.2649178
19	2.2787536	2.2810333	2.2833012	2.2855573	2.2878017
20	2.3010300	2.303 1960	2.3053513	2.3074960	2.3096301
21	2-3222193	2.3242824	2.3263358	2.3283796	2.3304138
22	2.3424227	2.3443923	2.3463530	2.3483048	2.3502480
23	2:3617278	2,3636120	2.3654880	2.3673559	2.3692158
24	2.3802112	2.3820170	2.3838153	2.3855063	2.3873898
25	2.3979400	2.3996737	2.4014005	2.4031205	2.4048337
26	2.41A9733	2.4166405	2.4183013	2-4199557	2.4216039
27	2.4313637	2.4329693	2.4345689	2.4361626	2-4377505
228	2.4471580	2.4487063	2.4502491	2.4517864	2.4533183
29	2.4623980	2.4638930	2.4653828	2.4668676	2.4683473
30	2.4771212	2.4785665	2.4800069	2.4814426	2.4828736
31	2.4913617	2.4927604	2.4941546	2.4955443	2.4969296
32	2,5051500	2.5065050	2-5078559	2.5092025	2.5105450
33	2.5185139	2.5198280	2.5211381	2.5224442	2.5237464
34	2.5314789	-	200000000000000000000000000000000000000	2-9352941	2.5365584
34	2.5440680	2.5327544	2.5465426	2.5477747	2.5490033
36		2.5453071	2.5587086	2.55990.66	2.5611014
STREET, STREET	2.5563025	2.5575072	2.5705429		2.5728716
37 38	2.5682017	2.5693739	2.5820634	2.5831988	2.5843312
TOTAL NAMED IN COLUMN	2.5797836	2.5809250		2.5943925	2.5954962
39	2,5910646	2.5921767	2.5932861	2.6053050	2.6063813
161	2.6020600	2.6031444	2,6042260		THE CONTRACTOR STATE AND PERSONS AS
PETERSON MARKETINE	2.6127838	2.6138418	2.6148972	2.6159500	2.6273658
42	2.6232403	2.6242821	2.6253124		
43	2.6334684	2.6344773	2.6354837	2.6364879	
据AS-2-2 产品	2.6434527	2.6444386	2.6445223	12.6464037	2.6473830

from 1. to 10000.							
Num.	. 5	6	7	. 8	9 1		
0	0.6989700	0.7781512	0.8450980	0.90309.00	0.9542425		
°2	1.1760912	1.2041200	1.2304489	1.2552725	1.2787536		
2	1.3979400	1.4149733	1.4313637	1.4471580	1.4623980		
3	1.5440680	1:5563025	1.5682017	1.5797836	1.5910646		
4	1.6532125	1.6627578	1.6720978	1.6812412	1.6901961		
5	1.7403627	1.7481880	1.7558748	1.7634280	1.7708520		
6	1.8129133	1.8195439	1.8260748	1.8325089	1.8388491		
7 8	1.8750612	1.8808136	1.3864907	1.8920946	1.8976271		
who a strain	1.9294189	1.9344984	1.9867717	1.9444827	1.9493900		
9	2.0211893	2.0253058	2.0293838	2.0334237	2.0374265		
11	2.0606978	2.0644580	2.0681858	2.0718820	2.0755469		
		The second second second second	And the second s	No. of Concession, Name of Street, or other party of the Concession, Name of Street, or other pa			
12	2.0969100	2,1003705	2.1038039	2.1072099	2.1105897		
13	2.1303337	2,1335389	2.1367205	2.1398791	2.1430148		
14	2.1613680	2.1643528	2.1958996	2.1702617	2.1731862		
16	2.2174839	2.2201081	2.2227165	2.2253093	2.2278867		
17	2.2430380	2.2455127	2.2479732	2.2504200	2.2528530		
18	2.2671717	2.2695129	2.2718416	2.2741578	2.2764618		
19	2.2900346	2.2922561	2.2944662	2.2966652	2.2988531		
20	2.3117538	2.3138672	2.3159703	2.3180633	2.3201463		
21	2.3324384	2.3344537	2.3364597	2.3384565	2.3404441		
22	2.3521825	2.3541084	2.3560258	2.3579348	2.3598355		
23	2.3710678	2.3729120	2.3747483	2.3765770	2.3783979		
24 .	2.3891661	2.3909351	2.3926969	2.3944517	2.3961993		
25	2.4065402	2.4082399	2.4099331	2.4116197	2.4132997		
26	2.4232459	2.4248816	2.4265112	2.4281348	2.4297523		
27	2.4393327	2.4409091	2-4434797	2.4440448	2.4456042		
28	2.4548448	2.4563660	2.4578818	2.4593925	2.4608978		
29	2.4698220	2.4712917	2.4727064	2.4742162	2.4756712		
30	2.4842998	2.4857214	2.4871384	2.4885507	2.4899585		
31	2.4983105	2.4996871	2.5010594	2.5024271	2.5037907		
32	2.5250448	2.5263393	2.5145477	2.5158738	2.5171959		
33	A STATE OF THE PARTY OF THE PAR	The second second	December of the second	2.5289167			
34	2.5378191	2.5390761	2.5403295		2.3428254		
35	2.5502283	2.5514500	2.5526682	2.5538830			
37	2.5740313	2.5751878	2.5763413	2.5658478	2.5670263		
38	2.5854607	2.5865873	2.5877110	2.5888317	2.5786392		
39	2.5965971	2.5976952	2.5987905		2.6009739		
40	2.6074550	2,6085260	2.6095944				
41	2.6180481	2.6190933	2.6201360		2.6222146		
42	2.6283889	2.6294096	2.6304279		3.6324573		
43	2.6384892	2.6394865	2.6404814		2.6424649		
44	2.6483600	2.6493348	2.6503075	2.6512780	2.6522462		

A & 2 2

A TABLE of Logarithms							
Num.	0.	i i	2	3	4		
45	2.6532125	2.6541765	2.6551384	2.6560982	2.6570558		
46	2.6627578	2.6637009	2.6646420	2.6655810	2.6665180		
47	2.6720978	2.6730209	2.6739420	2.6748611	2.6757783		
48	2.6812412	2.6821451	2.6830470	2.6839471	2.6848454		
49	2.6901961	2.6910815	2.6919651	2.6928469	2.6937269		
50	2.6989700	2.6998377	2.7007037	2.7015680	2.7024305		
17	2.7070702	2.7084208	2.7092700	2.7101174	2,7109631		
52	2.7160033	2.7168376	2.7176705	2.7185017	2.7193313		
-53	2,7242759	2.7250945	2.7259116	2.7267272	2.7275412		
54	2.7323937	2.7331973	2.7339993	2.7347998	2.7355989		
55	2.7403627	2.7411516	2.7419391	-2.7427251	2.7435097		
56	2.7481880	2.7489628	2.7497363	2.4505084	2.7512791		
57	2.7558748	2,7566362	2.7573960	27581547	2.7589119		
58	2.7634280	2.7641766	2,7649230	2.7656685	2.7664128		
59	2.7708520	2.7715871	2.7723217	2.7730547	2.7737864		
60	2.7781512	2.7788745	2.7795965	2.7803173	2.7810369		
61	2.7853298	2.7860412	2.7867514	2.7874605	2.7881684		
62	2.7923917	2.7530916	2.7937904	2.7944880	2.7951846		
63 :	2.7993405	2.8000293	2.8007171	2.8014037	2.8020892		
64	2.8061800	2.8068580	2.8075350	2.8082,110	2.8088859		
65	2.8129133	2.8135810	2.8142476	2,8149132	2.8155777		
66	\$200 CREST (\$100 CREST) \$100 CREST (\$100 C	2,8202014	2.8208580	2.8215135	2.8221681		
67	2,8195439	2.8267225	2.8273693	2.8280151	2.8286599		
	2.8260748		A CONTRACTOR OF THE PERSONS ASSESSMENT	The second second second			
68	2.8325089	2.8331471	2.8337844	2.8344207	2.8350561		
69	2.8388491	2.8394780	28401061	2.8407332	2.8413595		
. 70	2.8450980	2.8457180	2,8463371	2,8469553	2.8475726		
171	2.8512583	2.8518696	2.8524800	2.8530895	2.8536982		
72	2.8573325	2.8579353	2.8585372	2.8591383	2.8597386		
73	2.8633229;	2.8639174	2.8645111	2.8651040	2.8715729		
74	2.8692317	2.8698182	2.8704039	2.8767950	2.8773713		
75	2.8750513	2.8756399	2.8762178	2.8825245	2.8830933		
76	2.8808136	-2.8813846	2.8876173	2.8881795	2.8887410		
77	2.8864907	2.8870544		2.8937618	2.8943161		
78	2.8920946	2.8926510	2.8932067	Control of the last of the las			
79,	2.8976271	2.8981765	28987252	2.8992732	2.8998205		
80	2.9030900	2.9036325	3,9041744	2.9047155	2.9052560		
81	20084850	2.9090208	2.9095560	2,9100905	2.9106244		
82	2.9138128	2.9143431	2.9148718	2.9153998	2.9159272		
83	2.919078L	2.9196010	2.9201233	2.9206450	2.9211660		
84	2.9242793	2.9247960	2.9253121	2.9258276	2.9263424		
85	2.9294189	2.9299296	2.9304396	2.9309490	2.9314579		
86	2.9344984	2.9350031	2.9355073	2.9360108	2.9365137		
87	2.9395192	2 9400181	2.9405165	2.9410142	2.9415114		
88	2.9444827	2.9449759	2.9454686	2.9459607	2.9564523		
80	1 3.9493900	2.9498777	1 2.9503648	2.9508514	2.9513375		

	from 1 to 10000.							
Num,	5	6	7	- 8	9.			
45	2.6980114	2.6589648	2.6599162	2.6608655	2.6618127			
46	2.6674529	2.6683859	2.6693169	2.6702458	2.6711728			
47	2.6766936	2.6776069	2.6785184.	2.6794279	2.6803355			
48-	2.6857417	2.6866362	2.6875290	2.6884198	2.6893088			
49	2.6946052	2.6954817	2.6963564	2.6972293	2.6981005			
50	2.7032914	2.7041505	2.7050079	27058537	2.7067178			
51	2.7118072	2.7126497	2.7134905	2.7143297	2.7151673			
52	2.7201593	2.7209857	2.7218106	2.7226339	2.7234557 2.7315888			
53	2.7283538	2.7291647	2.7299743	2.7387805	2.7395723			
54	2.7442930	2.7450748	2.7458552	2.7466342	2.7474118			
56	2.7520484	2.7528164	2.7535830	2.7543483	2.7551123			
	()	2.7604225	2.7611758	2.7619278	2.7626786			
57	2.7596678	2.7678976	2.7686381	2.7693773	2.7701153			
. 58 .	2.7671558	2.7752462	2.7759743	2.7767012	2.7774368			
59	2.7817554	2.7845726	2.7831887	2.7839036	2.7846173			
61	2.7888751	2.7895807	2.7902852	2.7909885	2.7916906			
62	2.7958800	2.7965743	2.7972675	2.7979596	2.7986506			
63	2.8027737	2:8034571	2.8041394	2.8048206	2.8055008			
64	2.8095597	2.8102325	2.3109043	2.8115750	2.8122447			
65	2.8162413	2.8169038	2.8175654	2.8182259	2.8188854			
. 66	2.8228216	2.8234742	2.8241258	2.8247765	2.8254261			
67	2 8293038	2.8299467	2.8305887	2.8312297	2.8318698			
- 68	2.8356906	2.8363241	2.8369567	2.8375884	2.8382192			
67	2.8419848	2.8426092	2.8432328	2.8438554	2.8444772			
70	2 8481891	1.8488047	2.8494194	2.8500332	2.8506462			
71 _	2.8543060	2.8549130	2.8555191	28561244	2.8567289			
72	2.8603380	2.8609366	2.8615344	28621314	2.8627275			
. 73	2.8662873	2.8668778	2.8674675	2.8680564	2.8686444			
74 -	2.8721563	2.8785218	2.8790959	2.8796692	2.8802418			
75	2.8836615	2.8842288	2.8847953	2.8853612	2.8859263			
77	2.8893017	2.8898617	2.8904210	2.8909796	2.8915374			
78	2.8948696	2.8954225	2.8959747	2.8969262	2.8979770			
None and the last of the last	2.9003671	2.9009131	2.9014583	2.9020029	2.9025468			
79	2.9057959	2.9063350	2.9068735	2.9074114	2.9079485			
81	2.9111576		2.9122220	2.9127533	2.9132839			
82	2.9164539	2.9169800	2.9175055	2.9180303	2.9185545			
83	2.9216865	2.9222063	2.9227254		2.9237620			
84	2.9268567	2.9273704	2.9278834	2.9283958	2.9289077			
85	2.9319661	2.9324738	2.9329808	2.9334873	2.933 9933			
86	2:9370161	2.9375179	2.9380191	2.9385197	2.9390198			
87	2.9420080	2.9425041	2.9429996	2.9434945	2.7439889			
88	2.9469433	2.9474337	2.9479236	2.9484130	1-2,9489018			
89	2.9518230	2.9523080	1.9527924	1-2.9532767	2,9537504			

. A TABLE of Logarithms						
Num.	. 0	1	2	3	4	
90	2-9542425	2.9547248	.2.9552005	2.9556877	2,9561684	
91	2.9590414	2.9595184	2.9599948	2,9604708	2,9609462	
92	2.9637878	2.9642596	2.9647309	2.9652017	2.9656720	
193	2.9684829	2.9689497	2.9694159	2.9698816	2.9703469	
94	2.9731278	29735896	2.9740509	2.9745117	2.9749720	
95	2.9777236	2,9781805	2.9786369	2.9790929	2.9795484	
96	2.9822712	2.9827234	2.9831750	2.9836263	2.9840\$70	
97	2.9867717	2.9872192	2.9876663	2.9881128	2.9885589	
98	2.9912261	2.9916690	2.9921115	2.9925535	2.9929951	
99	2.9956352	2,9960736	2.9963117	2.9969492	2.9973864	
100	3.0000000	3.0004341	3.0008677	3.0013009	3.0017337	
IOI	3.002 3214	3.0047511	3.0051805	3.0056094	3.0060379	
102	3.0086002	3.0090257	3.0094509	3.0098756	3.0102999	
103	3.0128372	3.0132587	3.0136796	3.0141003	3.0145205	
104	3.0170333	3.0174507	3.0178677	3.0182843	3.0187005	
105	3.021 893	3.0216027	3.0220157	3.0224284	3.0228406	
106	3.0253059	3.0257154	3.0261245	3.0265333	3.0269416	
107	3.0293838	3.0297895	3.0301948	3.0305997	3.0310043	
108	3.0334227	3.0338257	3.0342273	3.0346284	3.0350293	
109	3.0374265	3.0378247	3.0382226	3.0386202	3.0390173	
110	3.0413927	3.0417873	3.0421816	3.0425755	3.0429691	
111	3.0453230	3.0457140	3.0461048	3.0464952	3.0468852	
613	3.0492180	3.0496056	3.0499928	3.0503797	3.0507663	
113	3.0530784	3.0534626	3.0538464	3.0542299	3.0546130	
114	3.0569048	3.0572856	3 0576661	3.0580462	3.0584260	
115	3.0606978	3.0610753	3.0614525	3.0618293	3.0622058	
116	3.0644380	3.0648322	3.0652061	3.0655797	3.0659530	
117	3.0681859	3.0685569	3.0689276	3.0692980	3.0696681	
118	3.071,8820	3.0722499	3.0726175	3.0729847	3.0733517	
119	3.0755470	3.0759118	3.0762762	3.0766404	3.0770043	
120	3.0791812	3.0795430	3.0799045	3.0802656	3.0806265	
12.1	3.0827854	3.0831441	3.0835026	3.0838608	3.0842187	
122	3.0863598	3.0867157	3.0870712	3.0874264	3.0877814	
123	3.0899051	3.0902580	3.0906107	3.0909631	3.0913151	
124	3.0934217	3.0937718	3.0941216	3.0944711	3.0948204	
125	3.0969100	3.0972573	3.0976043	3.0979511	3.0982975	
126	3.1003705	3.1007151	3.1010593	3.1014033	3.1017471	
117	2.1038037	3.1041455	3.1044871	3.1048284	3.1051694	
128	3.1072100	3.1075491	3.1078880	3.1082266	3.1085650	
129	3.1105897	3.1109262	3.1112625	3.1115985	3.1119343	
130	3.1139433	3.1142773	3.1146110		3.1152776	
Mary !	9.1173713	3.1176027	3.1179338	3.1172647	3.1185954	
131	3.1205735	3.1209023		3.1215598	3.1218880	
1 133	3,1228516	3.1241780			3.1251558	
1101	13.1271048	3.1274288	3.1277525	3.1280760	£ 3.1283993	

EUROPEAN PROPERTY		11011	1 to 10000.		
Num.	5	6	7	8	9
90	2.9566486	2.9571287	2.9576073	-2.9580858	2.9585639
91	2.9614211	2.9618955	2.9623693	2.9628427	2.9633155
92	2.9661417	2.9666110	2.9670797	2.9675485	2.9680157
93	2.9708116	2.9712758	2.9717396	2.9722028	2.9726656
94	2.9754318	2.9758911	2.9763500	2.9768083	2.9772662
95	2.9800034	2.9804579	2.9809119	2.9813655	2.9818186
96	2.9845273	2.9849771	2.9854265	2.9858753	2.9863238
97	2.9890046	2.9894498	2.9898946	2.9903388	2.9907827
98	2.9934362	2.9938769	2.9943171	2 9947569	2.9951963
99	3.0021661	3.0025980	2.9986951	3.0034605	3.0038911
101	3.0064660	3.0068937	3.0073209	3.0077478	3.0081742
-	IR THE SECOND STREET,			1.	-
102	3.0107239	3.0111473	3.0115704	3.0119931	3.0124154
103	3.0149403	3.0153597	3.0157787	3.0161973	3.0207755
104	3.0191163	3.0195317	3.0240750	THE RESERVE OF THE PARTY OF THE	3.0248960
106	3.0273496	3.0277572	3.0281644	3:0285712	3.0289777
107	3.0314085	3.0318123	3.0322157	3.0326188	3.0330214
108	3.0354297	3.0358298	3.0362294	3.0366289	3.0370279
109	3.0394141	3.0398105	3.0402066	3.0406023	3.0409977
110	3.0433623	3.0437551	3.0441476	3.0445398	3.0449315
111	3.0472749	3.0476642	3.0480532	3.0484418	3.0488301
112	3.0511525	3.0515384	3.0519239	3.0523091	3.0526939
113	3.0549958	3.0553783	3.0557605	3.0561423	3.0565237
114	3.0588055	3.0591846	3.0595634	3.0599419	FIRE DESCRIPTION OF THE PROPERTY OF THE PROPER
115	3.0625820	3.0629578	3.0633333	3.0637085	3.0640831
116	3.0663259	3.0666989	3.0670708	3.0674428	3.0678145
117	3.0700379	3.0704073	3.0707765	3.0711453	3.0715138
118	3.0737183	3.0740847	3.0744507	3.0748164	3.0751818
119	3.0773679	3.0777312	3,0780941	3.0784568	No. To Carlo Service Control of Management (Management Control
120	3.0809870	3.0813473	3.0817073	3.0820669	3.0824263
121	3.0845763	3.0839336	3.0852906	3.0856473	3.0860037
122	3.0881361	3.0884905	3.0888446	3.0891984	3.0895519
123	3.0916669	3,0920189	The second second	3.0927206	
124	3.0951693	3.0955180	3.0958664	3.0962146	207 (27) 541 (95-100) (10) (80) (80) (80)
125	3.0986437	3.0989896	3.0993353	3.0996806	TALLER MET PROCESSION STATES AND RESIDENCES
126	3.1020905	3.1024337	3.1027766	A RESIDENCE OF THE PROPERTY OF THE PARTY OF	
127	3.1055102	3.1058506	3.1001909	3:1065308	
129	3.1089031	3.1092410	3.1095785	3.1099159	NAME OF TAXABLE PROPERTY OF TAXABLE PROPERTY.
130	3.1156105	3.1126050	3.1129400	3.1132746	
131	3.1189257	3.1192559	3.1162756		NOT THE RESIDENCE OF PERSONS AND ASSOCIATION
132	3.1222159	3.1225435	3.1228709		
133	3.1254813	3.1258064	3.1261314		3.1267806
134	3.1287223	3.1290450	3.1293676	MED CONTRACTOR STREET,	3.7200116

	March Street, Street	AND THE RESERVE	CONTRACTOR OF	MODE SEAL OF STREET SEAL OF SEAL	THE PERSON NAMED IN COLUMN 1
E 0823000	A REST WIGHT IN		PERSONAL VIOLENCE AND	THE RESIDENCE OF THE PERSON NAMED IN	
P A VOTESTIDADO	SHOULD I THESE TO	KON SERBIS I	DESIGNATION AND ADDRESS.	DER TOTAL STATE OF	rithms
7 to 100000000000000000000000000000000000	TOTAL OF THE STATE OF	Jack on Still in	100000000000000000000000000000000000000	LUVER	FRESCHAR
THE RESERVE AND ADDRESS.	and the second second	COS - COMPANY	1907 SEEL 11	HOME HOUSE AND AND SERVICE OF SERVICE AND ADDRESS OF SERVICE AND ADDRESS OF A	C. PROPERTY AND

Nam 1	0		. 2	- 3	4
122	3.1303338	3.1306553	3,1309767	3.1312978	3.1316187
136	3.1335389	3.1338581	3.1341771	3.1344958	3.1348144
137	3.1367206	3.1370374	3.1373541	3.1376705	3.1379867
138	3.1378791	3.1401937	3.1405080	3.1408222	3.1411361
139	3.1430148	3.1433271	3.1436392	3.1439511	3.1442628
140-	3.1461280	3.1464381	3.1467480	3.1470577	3.1473671
141	3.1492191	3-1495270	3.1498347	3.1501422	3.1504494
142	3.1522883	3-1525941	3.1528996	3.1532049	3.1535100
143	3.1553360	3-1556396	3.1559430	3.1562462	3.1565491
144	3.1 583625	3.1586540	3.1589653	3.1592663	3.1.595672
145	3.1613680	3-1616674	3.1619666	3.1622656	3.1625644
146	3.1643528	3.1646502	3.1649474	3.1652443	3.1655411
147	3.1673173	3.1676127	3.1679078	3.1682027	3.1684975
148	3.1702617	3.1705550	3.1708482	3.1711411	3.1714339
149	3.1731863	3.1734776	3.1737688	3.1740598	3.1743506
150	3.1760913	3.1763807	3.1766399	3.1769590	3.1772478
151	3.1789769	3.1792645	3-1795518	3.1798389-	3.1801259
152	3.1818436	3-1821292	3.1824146	3.1826999	3.1829850
1 23	3.1846914	3.1849752	3.1852588	3.1855421	3.1858253
154	3.1875207	3.1878026	3.1880844		3.1886473
155	3-1903317	3.1906118	3.1908917	3.1911714	3.1942367
156	3.1931246	3.193 1029	3.1936810	3.1939590	3.1970047
157	3-1958996	3.1961762,		S. Company of the Com	August and and
158	3.1986571	3.1989319	3.1992065	3.1994809	3.1997552
159	3.2013971	3.2016702	3.2019431	3 2022158	3.2624883
160	3.2041200	3.2043913	3.2046625	3.2049335	3.2052044
161	3.2068259	3.2070955	3.2073650	3.2103185	3.2079035
163	3.2095130	3.2097830	3.2127201	3-2129862	3.2132521
164	3.2148438	3.2151086	3.2153732	3.2156376	3.2159018
165	3.2174839	3-2177471	3.2180100	3.2182728	3.2185355
166	3.2201081	3.2208696	3.2206310	3.2208922	3.221 1533
167	3.3227165	3.2229754	3-2232363	3.2234959	3.2237554
168	3.2253093	3.2255677	3.2258259	3.2260841	3.2263421
169	3.2278867	3.2281436	3.2284003	3.2286570	3.2289134
170	3.2304489	3.2307043	3.2309596	3.2312146	3.2314696
171	3.2329961	3.2332500	3.2335038	3.2337574	3.2340108
172	3.2355284	3.2357809	3.2360331	3.2362853	3.2365373
173	3.2380461	3.2382971	3.2385479	3.2387986	3.2390491
174	3.2405492	3.2407988	3.2410481	3.2412974	3.2415465
175	3.2430380	3.2432861	3.2435341	3.2437819	3.2440296
176	3.2455127	3.2457593	3.2460059	3.2462523	3.2464986
177	3.2479733	3.2482186	3.2484637	3.2487087	3.2489536
178	3.2504200	3.2506639		3.2511513	3.2513948
11.7.9	3.2528530	1 3.2530056	1 3-2523380	3.2535803	3.2538224

SE 2 1/ 2 3 4	20000 1 1	t cagolia d	00	1 I O PW
D. H. L.	 CORPORATION CO.	1,0000000000000000000000000000000000000	Bertlindh	المراصوي

Num.		6	7	8	0
135	3.1319393	3.1322597	3.1325798	3.1328998	3.1332194
136	3.1351326	3.1354507	3.1357685	3.1360861	3.1364034
137	3.1383027	3.1386184	3.1389339	3.1392492	3.1395643
138	3.1414498	3.1417632	3.1420765	3.1423895	3.1427022
139	3.1445742	3.1448854	3.1451964	3.1455072	3.1458177
140	3.1476763	3.1479853	3.1482941	3.1496026	3.1489110
141	3.1507564	3.1510632	3.1513698	3.1516762	3.1519824
142	3.1538149	3.1541195	3.1544240	3.1547282	3.1550322
143	3.1568519	3-1571544	3-1574568	3.1577589	3.1580608
144	3.1598678	3.1601683	3.1604685	3.1607686	3-1610684
145	3.1628630	3.1631614	3.1634595	3.1637575	3.1640553
146	3.1658376	3.1661340	3.1664301	3.1667260	3.1670218
147	3.1687920	3.1690863	3.1693805	3.1696744	3.1699682
148	3.1717264	3.1720188	3.1723110	3.1726029	3.1728947
149	3.1746412	3.1749316	3.1752218	3.1755118	3.1758016
150	3.1775365	3.1778250	3.1781130	3.1784013	3.1786892
151	3.1804126	3.1806992	3.1809856	3.1812718	3.1815578
152	3.1832698	3.1835545	3.1838390	3.1841233	3.1844075
153	3.1861084	3 1863912	3.1866739	3.1869563	3.1872386
154	3.1889285	3.1892095	3.1894903	3.1897709.	3.1900514
155	3.1917304	3.1920096	3.1922886	3.1925674	3.1928461
136	3.1945143	3-1947917	3.1950690	3.1953460	3.1956229
157	3.1972806	3.1975562	3.1978317	3.1981070	3.1983821
158	3.2000293	- 3.2003032	3.2005769	3.2008505	3.2011239
159	3.2027607	3.2030329	3.2033049	3.2035768	3.2038485
160	3.2054750	3.2057455	3.2060159	3.2062869	3.2065560
161	3.2081725	3.2084413	3.2087100	3.2089785	3-2092468
162	3.2108534	3.2111205	3.2113876	3.2116544	3.2119211
163	3.2135178	3.2137833	3.2140487	3.2143139	3.2145789
164	3.2161659	3.2164298	3.2166936	3.2169572	3.2172206
166	3.2187980	3.2190603	3.2193225	3.2195845	3.2198464
167	3.2214142	3.2216750	3.7219356	3.2221960	3.2224563
168	DENNESSESSION OF STREET	William Principal Conference of the Conference o	Charles State And Constitution	3.2247920	3.2250507
	3.2265999	312268576	3.2271151	3.2273724	3.2276296
169	3.2191697	3.2294258	3.2296818	3.2299377	3.2301934
170	3.2317244	3.2319790	3.2322335	3.2324879	3.2327421
172	3.2342641	3.2345173	3.2347703	3.2350232	3.2352759
173	3.2367891	3.2370408	3.2372923	3-2375437	3-2377950
174	3.2392995	3.2395497	3.2397998	3.2400498	3.2402996 3.2427898
175	3.2442771	3-2425442	3.2422919	3-2425414	3.2452658
176	3.2467447	3.2469907	3.2472365	3.2474823	3.2477278
177	3.2491984	3.2494430	3.2496874	3.2499317	3-2501759
178	3.2516382	3.2518814	3.2521246	3.2513675	3.2526103
129	3.2540645	3:2543063	3.2545481	3.2547897	3.2550312

Bob

A TABLE of Logarithms							
Num.	0	1	2	3	4		
180	3.2552725	3.2555137	3.2557548	3.2559957	3.2562365		
181	3.2576786	3.2579184	3.2581582	3.2583978	3.2586373		
182	3.2600714	3.2603099	3.2605484	3.2607867	3.2610248		
183	3.2624511	3.2626883	3.2629255	3.2631625	3.2633993		
184	3.2648178	3 2650538	3.2652896	3.2655253	3.2657609		
185	3.2671717	3.2674064	3.2676410	3.2678754	3.2681097		
186	3.2695129	3.2697464	3.2699797	3.2702128	3.2704459		
187	3.2718416	3.2720738	3.2723058	3.2725378	3.2727696		
188	3-2741578	3.2743888	3.2746196	3.2748503	3.2750809		
189	3.2764618	3 2766915	3.2769211	3.2771506	3.2773800		
190	3.2787536	3.2789821	3.2792105	3.2794388	3.2796669		
191	3.2810334	3.2812607	3.2814879	3.2817150	3.2819419		
192	3.2833012	3.2835274	3.2837534	3.2839793	3.2842051		
193	3.2855573	3.2857823	3.2860071	3.2862318	-3.2864565		
194	3.2878017	3.2880255	3.2882492	3.2884728	3.2886963		
195	3.2900346	3.2902573	3.2904798	3.2907022	3.2909246		
196	3.2922561	3.2924776	3.2926990	3.2929203	3.2931415		
197	3.2944662	3.2946866	3.2949069	3.2951271	3.2953471.		
198	3.2966652	3.2968845	3.2971036	3.2973227	3.2975417		
199	3.2988531	3.2990713	3.2992893	3.2995073	3.2997251		
200	3.3010300	3.3012471	3.3014641	3.3016809	3.3018977		
201	3:3031961	3.3034121	3.3036280	3.3038438	3.3040595		
202	3.3053514	3.3055663	3.3057811	3.3059959	3.3062105		
203	3.3074960	3.3077099	3-3079237	3.3081374	3 3083509		
204	3.3096302	3.3098430	3.3100557	3.3102684	3.3104809		
205	3-3117539	3.3119657	3.3121774	3.3123889	3.3126004		
206	3.3138672	3.3140780	3.3142887	3.3144992	3.3147097		
207	3.3159703	3.3161801	3.3163897	3.3165993	3.3168087		
208	3.3180633	3.3182721	3.3184807	3.3186893	3 3188977		
209	3.3201463	3.3203540	3.3205617	3.3207592	3.3209767		
210	3.3222193	3.3224260	3.3226327	3.3228393	3.3230457		
211	3.3242825	3.3244882	3.3246939	3 3248995	3.3251050		
212	3.3263359	3.3265407-		3.3269500	3.3271545		
213	3.3283796	3.3285834	3.3287872	3.3289909	3.3291944		
214	3-3394138	3.3306167	3.3308195	3.3310222	3.3312248		
219	3.3324385	3.3326404	3,3328423	3.3330440	3-3332457		
216	3.3344537	3.3346548	3.3348557	3.3350565	3.3352572		
217	3.3364597-	3.3366598	3.3368598	3-3370597	3-3372595		
218	3.3384565	3.3386557		3-3390537	3.3392526		
219	3-3404441	3.3406424	3.3408405	3.3410386	3.3412366		
220	3-3424227-	3.3426209		1 3.3430145	3.3432116		
221	3-3443943	3.3445887	3-3447851	3,3449814	3.3451776		
222	3.3463530	3.3465486	3-3467441	3-3469395	3.3471348		
223	3.3483049	3.3484996	3.3486942	3-3488887	3.3490832		
1224	3.3502480	3.3504419	3.3506356	1 3.3508293	3.3510228		

1000	from 1 to 10000.						
Num.	5	6	7.7	8	9		
130	3.2564772	3.2567177	3.2569581	3.2571984	3.2574386		
181	3.2588766	3.2591158	3.2593549	3.2595939	3.2598327		
182	3.2612629	3.2615008	3.2617385	3.2619762	3.2622137		
183	3.2636361	3.2638727	3.2641092	3.2643455	3.2645817		
184	3.2659964	3.2662317	3.2664669	3.2667020	3.2669369		
185	3.2683439	3.2685780	3.2688119	3.2690457	3.2692794		
186	3.2706788	3.2709116	3.2711443	3.2713769	3.2716093		
187	3.2730013	3.2732328	3.2734643	3.2736956	3.2739268		
188	3.2753113	3-2755417	3-2757719	3.2760020	3.2762320		
189	3.2776092	3.2778383	3.2780673	3.2782962	3.2785250		
190	3.2798950	3.2801229	3.2803507	3.2805784	3.2808059		
191	3.2821688	3.2823955	3.2826221	3.2828486	3.2830750		
192	3.2844307	3.2846563	3.2848817	3.2851070	3.2853322		
193	3.2866810	3.2869054	3.2871296	3.2873538	3.2875778		
194	3.2889196	3.2891428	3.2893659	3.2845839	3.2898118		
195	3.2911468	3.2913688	3.2915908	3.2918127	3.2920344		
196	3.2933626	3.2935835	3.2938044	3.2940251	3.2942457		
197	3.2955671	3.2957869	3.2960067	3.2962263	3.2964458		
198	3.2977605	3.2979792	3.2981979	3.2984164	3.2986348		
199	3.2999429	3.3001605	3.3003781	3.3005955	3.3008128		
200	3.3021144	3.3023309	3.3025474	3.3027637	3.3029799		
201	3.3042751	3.3044905	3.3047057	3.3049212	3.3051363		
202	3.3064250	3.3066394	3.3068537	3.3070679	3.3072820		
203	3.3085644	3.3087778	3.3089910	3.3092402	3.3094172		
204	3.3106933	3.3109056	3.3111178	3.3113299	3.31-15420		
205	3.3128118	3.3130231	3.3132343	3.3134454	3,3136563		
206	3.3149200	3.3151303	3.3153405	3.3155505	3.3157605		
207	3.3170181	3.3172273	3.3174365	3.3176455	3.3178545		
208	3.3191061	3-3193143	3.3195224	3.3197305	3.3199384		
209	3.3211840	3.3213913	3.3215984	3.3218055	3.3220124		
210	3.3232521	3.3234584	3.3236645	3.3238706	3.3240766		
211	3.3253104	3.3255157	3.3257209	3.3259260	3.3261310		
212	3.3273589	3.3275633	3.3277675		3.3281757		
213	3.3293979	3.3296012	3.3298045	3.3200077	3.3302108		
214	3.3314273	3.3316297	3.3318320	3.3320343	3.3322364		
215	3.3334473	3.3336488	3.33385er	3.3340514	3.3342526		
216	3.3354579	3.3356585	3.3358589		3.3362596		
217	3.3374593	3.3376589	3.3378584	3.3380579	3.3382572		
218	3.3394514	3.3396501	3.3398488		3-3402458		
219	3.3414345	3.3416323	3.3418301	3.3420277	3-3422252		
220	3.3434086	3.3436055	3.3438023	3.3439991	3-3441957		
221	3-3453737	3.3455698	3-3457557	3.3459615	3.3461373		
222	3-3473300	3-3475252	3-3477202	3-3479152	3.3481101		
223	3-3492775	3.3494718	3.3496660	3.3498691	3.3500541		
224	3.3512163	3.3514097	3.3516031	3/3517963	3.3519895		

Bbb 2

A TABLE of Logarithms										
Num.	0 1	1	2	3	4					
229	3.3521825	3.3523755	3.3525684	3.3527612	3.3529539					
226	3.3541084	3.3543006	3.3544926	3.3546845	3.3548764					
227	3.3560259	3.3562171	3.3564083	3.3565994	3.3567905					
228	3.3579348	3.3581253	3.3583156	3.3585059	3.3586961					
229	3.3598355	3.3600251	3.3602146	3.3604040	3.3605934					
230	3.3617278	3.3619166	3.3621053	3.3622939	3 3624825					
231	3.3636120	3.3638000	3.3639878	3 3641756	3.3643633					
232	3.3654880	3.3656751	3.3658622	3.3660492	3.3681008					
233	3.3673559	3.3675423	3.3695869	3.3679147	3 3699576					
234	3.3692159	3.3694014	3.3714373	3.3716219	3.3718065					
235	3.3710679	3.3712526	3.3732799	3.3734637	3.3736475					
236	3.3729120	STATE OF THE PARTY	CALLED THE STATE OF THE STATE O	Commence of the commence of	3.3754807					
237	3.3747483	3.3749316	3.3751147	3.3752977	3.3773062					
238	3.3765769	3.3767594	3.3787612	3.3789427	3.3791241					
239	3.3783979	3.3785796	3.3805730	3.3807538	3.3809345					
240	3.3802112	3.3821972	3.3823773	3.3825573	3.3827373					
241	3.3838154	3.3839948	3.3841741	3.3843534	3.3845326					
243	3.3856063	3.3857850	3.3859636	3.3861421	3.3863206					
244	3.3873898	3.3875678	3-3877457	3.3879235	3.3881012					
245	3.3891661	3.3893433	3.3895205	3.3896975	3.3898746					
246	3.3909351	3-3911116	3.3912880	3.3914644	3.3916407					
247	3.3926969	3:3928727	3-3930485	3.3932241	3-3933997					
248	3.3944517	3.3946268	3-3948018	3.3949767	3.3951516					
249	3.3961993	3-3963737	3 3965480	3.3967223	3.3968964					
250	3.3979400	3.3981137	13.3982873	3.3984608	3.3986343					
251	3.3996737	3.3998467	3.4000195	3.4001925	3.4003653					
252	3.4014005	3.4015728	3.4017451	3.4019172	3.4020893					
253	3.4031205	3.4032921	3.4034637	3 4036352	3.4038076					
254	3.4048337	3.4050047	3.4051755	3.4053464	3.4055171					
255	3.4065402	3.4067105	3.4068807	3.4070508	3.4072209					
256	3.4082400	3.4084096	3.4085791	3.4087486	3:4089180					
257	3.4099331	3.4101021	3.41.0271.0	3.4104398	3.4106085					
258	3.4116197	3.4117.880	3.4119562	3.4121244	3.4122925					
259	3.4132998	3.4134674	3.4136350	3.4138025	3.4139700					
260	3.4149733	3.4151404	3.4153073	3.4154742	3.4156410					
261	3.4166405	3.4168069	3.4169732	3.417.1394	3,4193056					
262	3.4183013	3.4184670	3.4186327	3.4187983	3.4189638					
263	3.4199557	3.4201208	3-4202859	3.4204509						
264	3.4216039	3.4217684	3.4219328	3.4220972	3.4222614					
265	3.4131459	3.4234097	3.4235735	3.4237372	3,4239009					
266	3.4248816		3.4252080	3.4253712	3.4255342					
1	3.4265113	3.4266739	3.4268365	3.4169990						
268	3.4281348	3.4282968	3.4284588	3.4286207	3.4303976					
169	3.4297523	3.4299137	3.4300751	3.4302364	1-3.43.3910					

from 1 to 1000c.									
Num.	5	6	7	- 8	9				
225	3,3531465	3.3533391	3.3535316	3-3537239	3.3539162				
226	3.3550682	3.3552599	3.3554515	3.3556430	3-3558345				
227	3.3569814	3.3571723	3.3573630	3-3575537	3-3577443				
228	3.3588862	3.3590762	3.3592662	3.3594560	3.3596458				
229	3.3607827	3.3609719	3.3611610	3.3613500	3.3615390				
230	3.3626709	3.3628593	3.3630476	3.3632358	3.3634139				
231	3.3645510	3.3647386	3.3649260	3.3651134	3.3653007				
232	3.3664230	3.3666097	3.3667963	3.3669830	3.3671695				
233	3.3682869	3.3684728	3.3705131	3.3706981	3 3708830				
235	3.3701428	3.3703280	3.3723596	3.3725438	3.3727279				
236	3.3733311	3.3740147	3.3741983	3.3743817	3.3745651				
September 1997	The second secon	Contract of the Contract of th	3-3760292	3.3762118	3.3763944				
237	3.3756636	3.3758464	3.37.78524	THE TANK OF THE PARTY OF THE PA	3.3782161				
239	3.3774884:	3.3794868	3.3796680	3.3798492	3.3800302				
240	3.3881151	3.3812956	3.3814761	3.3816565	3,9818368				
241	3.3829171	3.3830969	3.3832766	3.3834563	3.3836359				
242	3.3847117	3.3848908	3.3850698	3.3852487	3.3854275				
243	3.3864990	3.3866773	3,3868555	3.3870337	3.3872118				
244	3.3882789	3.3884565	-3.3886340	3.3888114	3.3889888				
245	3.3900515	3.3902284	3.3904052	3.3905819	3.3907585				
246	3.3918169	3.3919931.	3.3921691	3.3923452	3.3925211				
247	3:3935752	3.3937506	3.3939260	3-3941013	3.3942765				
248	3.3953264	3.3955011	3.3956758	3.3958504	3.3960249				
249	3.3970705	3.3972446	3.3974185	3-3975924	3.3977662				
250	3.3988077	3.3989811	3.3991543	3:3993275	3.3995007				
251	3.4005380	3.4007106	3,4008832	3.4010557	3 4012282				
252	3.4022614	3.4024333	3.4026052	3.4027771	3.4029488				
253	3.4039780	3.4041492	3.4043205	3.4044916	3.4046627				
254	3.4056878	3.4058584	3.4060289	3.4061994	3.4063698				
255	3.4073909	3.4075608	3.4077307	3.4079005	3.4080703				
256	3.4090874	3.4692567	3.4094259	3.4095950					
258	3.4107772	3.4126285	3.4127964	3.4129643	3 4131320				
	A TOTAL TOTAL CONTROL OF THE PARTY OF THE PA	Marian Company	Marie and the second	Cally Cally Commonwealth Common Commo	Management of the second				
259	.3.4141374	3.4143047	3.4144719	3.4146391					
261	3.4158077	3.4159744	3.4161410	3.4163076					
262	3.4191293	3.4192947	3.4194601	3.4196254	3.4197906				
263	3.4207806	3.4209454	3.4211101	3.4212748	3.4214394				
264	3.4224257	3.4225898	3-4327539	3.4229180	3.4230820				
265	3.4240645	3.4242281	3.4243915	3.4245550	3.4247183				
266	3.4256972	3.4258601	3.4260230	3.4261858	3.4263486				
267	3.4273238	3.4274861	3.4276484	3.42 8106	3.4279727				
268	3.4289443	3.4291060	3.4292677	3.4294293	3.4295908				
269	3.4305588	3.4307199	3.4308809	3.4313419	3.4312019				

A TABLE of Logarithms

Num.	0	I	2	3	4
270	3.4313638	3.4315246	3.4316853	3.4318460	3.4320067
271	3-4329693	3.4331295	3.4332897	3.4334498	3.4336098
272	3-4345689	3.4347285	3.4348881	3.4350476	3.4352071
273	3.4361626	3.4363218	3.4364807	3.4366396	3-4367985
274	3.4377506	3.4379090	3.4380674	3.4382258	3.4383841
275	3-4393327	3.4394906	3.4396484	3.4398062	3.4399639
276	3.4409091	3-4410664	3.4412237	3.4413809	3.4415380
277	3-4424798	3.4426365	3.4427932	3.4429499	3.4431065
278	3.4440448	3.4442010	3.4443571	3-4445132	3.4446692
279	3.4456042	34457598	3 4459154	3.4460709	3.4462264
280	3.4471580	3-4473131	3.4474681	3.4476231	3.4477780
281	3.4487063	3.4488608	3.4490153	3.4491697	3.4493241
282	3.4502491	3.4594931	3.4505570	3.4507109	3.4508647
283	3.4517864	3.4519399	3.4520932	3.4522466	3.4523998
284	3.4533183	3.4534712	3.4536241	3.4537769	3.4539296
285	3.4548449	3-4549972	3.4551495	3.4553018	3.4554540
286	3.4563660.	3.4565179	3.4566696	3.4568213	3.4569731
287	3.4578819	3.4580332	3.4581844	3.4583356	3.4584868
288	3.4593925	3.4595433	3.4596940	3.45 98446	3.4599953
289	3.4608978	3.4610481	3.4611983	3.4613484	3.4614985
290	3 4623980	3.4625477	3.4626974	3.4628470	3.4629966
291	3.4638930	3.4640422	3.4641914	3.4643405	3.4644895
292	3.4653828	3.4655316	3.4656802	3.4658288	3.4659774
293	3.4668676	3.4670158	3.4671640	3.4673120	
294	3.4683473	3.4684950	3.4686427	3.4687503	3.4674601
295	3.4698220	3.4699692	3.4701163	3.4702634	3.4689378
296	3.4712917	3.4714384	3.4715850	3.4717317	3.4704105
297	3.4727564	3.4729027	3.4730488	3.4731949	3-4718782
298	3.4742163	3.4743620	3.4745076	3.4746533	3.4733410
299	3.4756712	3.4758164	3.47596164	3.4761067	3.4747988
300	3.4771212	3.4772660	3.4774107	3.4775553	3.4762518
301	3.4785665	3.4787108	3.4788550	3-4789991	3.4776999
302	3.4800069	3.4801507	3.4802945	3.4804381	3 4791432
303	3.4814426	3.4815859	3.4817292	3.4818724	3.4820156
W WEST OF	ARCHITECTURE CONTRACTOR CONTRACTO	A STATE OF THE PARTY OF THE PAR	A Commence of the Commence of	The state of the s	
304	3.4828736	3.4830164	3.4831592	3.4833019	3.4834446
305	3.4842998	3.4844422	3.4845845	3.4847268	3.4848696
306	3.4857214	3.4858633	3.4860052	3.4861470	3.4862888
307	3.4871384	3.4872798	3.4874212	3.4875626	3.4877039
	3.4885507	3.4886917	3.4888326	3.4889735	3.4891144
309	3.4899585	3.4900990		3.4903799	3.490520
310	3.4913617	3.4915018		3-4917818	3.491921
311	3.4927604	3.4929000	3.4930396	3.4931791	3.493318
312	3.4941546	3.4942938	3.4944329		3-4947110
313	3-4955443	3.4956831	3-4958218	3.4959604	3.496099
1 314	1 3.4969296	1 3.4970679	1 3-4972062	3.4973444	3.4974829

To be discussed in	A Company of the Comp	6	1 to 10000.	8	
Num.	5		7	40.60	9
270	3.4321673	3.4323278	3.4324883	3.4326487	3.4328090
271	3:4337698	3.4339298	3.4340896	3-4342494	3.4344092
272	3.4353665	3.4355258	3.4356851	3.4358444	3.4360035
273	3.4369573	3.4371161	3.4372748	3.4374334	3.4375920
274	3.4385423	3.4387005	3.4388587	3.4390167	3.4391747
275	3.4401216	3.4402792	3.4404368	3.4405943	3.4407517
276	3.4416951	3.4418522	3.4420092	3.4421661	3.4423229
277	3.4432630	3.443+195	3-4435759	3.4437322	3.4438885
278	3.4448252	3.4449811	3-4451370	3 4452928	3.4454481
279	3 4463818	3.4465372	3.4466925	3-4468477	3.4470029
280	3.4479329	3.4480877	3.4482424	3.4483971	3.4485517
281	3.4494784	3.4495326	3.4497868	3.4499410	3.4509951
282	3.4510185	3-4511721	3.4513258	3-4514794	3.4516329
283	3.4525531	3.4527062	3.4528593	3.4530124	3.4531654
284	3.4540823	3.4542349	3.4543875	3.4545400	3.4546924
285	3.4556061	3.4557582	3.4559102	3.4560622	3.4562142
286	3.4571246	3.4572762	3.4574277	3.4575791	3.4577305
287	3.4586378	3.4587889	3.4589399	3 4590908	3.4592417
288	3.4601458	3.4602963	3.4604468	3.4605972	3.4607475
289	3.4616486	3.4517986	3.4619485	3.4620934	3:4622482
290	3.4631461	3.4632956	3.4634450	3.4635944	3.4637437
291	3.4646386	3.4647875	3.4649364	3.4650853	3.4652341
292	3.4661259	3.4662743	3.4564227	3.4665711	3.4667194
A CONTRACTOR OF STREET	3.4675081	3.4677560	3.4679039	3.4680518	3.4681996
293	3.4690853	3.4692327	3.4693801	3.4695275	3.4696748
294	3.4705575	3.4707044	3.4709513	3.4709982	3.4711450
295	3.4720247	3.4721711	3.4723175	3.4724639	3.4726102
296	3.4734870	3.4736329	3.4737788	3-4739247	3.4740705
297	3.4749443	3.4750898	3.4752352	3.4753806	3.4755259
298	3.4763968	3.4765418	3.4766867	3.4768316	3.4769765
299	3.4778445	3.4779890	3.4781334	3.4782778.	3.4784222
300	3.4792873	3-4794313	3.4795753	3.4797192	3-4798631
2.50.2	3.4807254	3.4808689	3.4810124	3.4811559	3.4812993
302	3.4821587	3.4823018	3.4824448	3.4825878	3.4827307
***********	The second secon	and the second	3.4838725		
304	3.4835873	3.4837299	3.4852954	3.4840150	3.4841574
305	3.4850112		3.4867138	3.4868554	
306	3.4864305	3.4879863	3.4881275	3.4882686	
307	3.4878451	3.4893959	3.4895366	3.4896773	3.4898179
308	3.4892552	3.4908009	3.4909412		3.4922216
309	3.4906607	B CONTROL OF SUPERIOR SERVICE	TO A DECEMBER AND TO A STATE OF THE PERSON NAMED	3.4910814	3.4926207
310	3.4920616	3.4922014	3.4923413	3.4924810	3-4940154
311	3.4934580	3.4935974	3.4937368		3 4954056
312	3.4948500	3.4949390	3.4951279	3.4952667	3.4967913
313	3.4962375	3.4963761	3.4965145		3.4981727
314	13.4976206	3.4977587	3.49/090/	7.4700347	3.4704741

A TABLE of Logarithms										
Num.	0	1	2	3	4					
315	3.4983106	3.4984484	3.4985862	3.4987240	3.4988617					
316	3.4996871	3.4998245	3.4999619	3.5000992	3.5002365					
317	3.5010593	3.5011962	3.5019332	3.5014701	3.5016009					
318	3.5024271	3.5025637	3.5027002	3.5028366	3.5029731					
319	3.5037907	3.5039268	3.5040629	3.5041989	3.5043349					
320	3.5051500	3.5052857	3.5054213	3.5055569	3.5056925					
321	3.5065050	3.5066403	3.5067755	3.5069107	3.5070459					
322	3.5078559	3.5079907	3.5081255	3.5082603	3.5083950					
323	3.5092025	3.5093370	3.5094713	3.5096057	3.5097400					
324	3.5105450	3.5106790	3.5108130	3.5109469	3.5110808					
925	3.5118834	3.5120170	3.5121505	3.5122841	3.5124175					
326	3.5132176	3.5133508	3.5134840	3.5136171	3.5137501					
327	3.5145478	3.5146805	3.5148133	3.5149460	3.5150787					
328	3.5158738	3.5160062	3.5161386	3.5162709	3.5164031					
329	3.5171959	3.5173279	3.5174598	3.5175917	3.5177236					
330	3.5185139	3.5186455	3.5187771	3.5189086	3.5190400					
331	3.5198280	3.5199592	3.5200903	3.5202214	3.5203525					
332	3.5211381	3-5212689	3-5213996	3.5215303	3.5216610					
333	3.5224442	3.5225746	3.5227050	3.5228353	3.5229656					
334	3.5237465	3.5238765	3.5240064	3.5241364	3.5242663					
335	3.5250448	3.5251744	3.5253040	3.5254335	3.5255631					
336	3.5263393	3.5264685	3.5265977	3.5267269	3.5281451					
337	3.5276299	3.5277588	3.5278876	A CONTRACTOR OF THE PARTY OF TH						
338	3.5289167	3.5290452	3.5291736	3.5293026	3.5294303					
339	3.5301997	3.5303278	3.5304558	3.5305839	3.5307118					
340	3.5314789	3.5316066	3.5317343	3.5318619	3.5319895					
*341	3.5327544	3.5328817	3.5330090		3.5332635					
342	Marie Carrier State Control of the Control of the Con-	3.5341531	3.5342800	AND THE RESERVE AND THE PARTY OF THE PARTY O	3.5345338					
343		3.5354207	3.5355473		3.5370631					
344	3.5365584	3.5366847	3.5380708		3.5383223					
345	3.5390761	3.5392016	THE RESERVE THE PROPERTY OF THE PARTY OF THE		3.5395779					
347		3.5404546			3.5408298					
348		NE 137 10 10 10 10 10 10 10 10 10 10 10 10 10		3.5419535	3.5420781					
STATE OF THE PERSON NAMED IN	CONTRACTOR CONTRACTOR CONTRACTOR	SEE MAN AND ADDRESS OF THE PARTY OF THE PART	CO DESCRIPTION OF THE PERSON O	COS RECEIVED AND ADDRESS OF THE PARTY OF THE						
349										
351				The second secon	3.5458017					
352										
353										
354										
355										
356										
355		CHRONIC CONTROL OF STREET, CAN SERVICE CONTROL OF STREET, CAN			MEDICAL PROCESSION AND ACCUSE OF THE ACCUSE					
358			AND DESCRIPTION OF STREET		THE RESIDENCE OF COMMERCE AND ADDRESS OF THE PARTY OF THE PARTY.					
250	2 55500	The second	A 2.855226		THE RESERVE OF THE PARTY OF THE					

KEELS SE	Num,	2 4-0		6		7	/数理	8		A CONTRACTOR OF THE PARTY OF TH
CAN PROPERTY AND RESERVED	16	3.4989	994	3.4991	370	3.4992	746	-		_ 9
SOME GOOD SECTION	17	3.5003	737	3.5005	109	3.5006	187	3 49941	21	3.499
	18	3.5017	437	3.50188	305	3.50201	172	3.50078	52	3.5000
120 No. 10 LESS 188	19	3.5031	94	3.50324	158	3.50338	27.	3.50215	39	3.5022
	20	3.5044	709	3.50460	68	3.50474	126	3.50351	33	3.5036
THE PERSON NAMED IN	PERSONAL PROPERTY.	3.50582	80	3.50596	25	3.50609	20	3.504878	35	3.5050
CONTRACTOR	1.5	3.50718	10	3.50731	60	3.50009	90	3.506234	4	3.5063
CLASS BUILDING STORY	22	3.50852	97	3.50866	44	3.50745	"	3.507586	0	3.5077
32	10 to 1000 Page 100	3.50987	43	3.51000	85	3.50879	90 1	3.508933	5	3.5090
32	E9242 DESP	3.51121	47	3.51134	CONTRACTOR OF THE	3.51014	27	3.510276	8	3.5104
32	E.E. BAT 2009 ESS	3.51255	10	3.51268	STATE OF THE PARTY	3-51148	23	3.511616	0	3.51174
32	0	3.51388	32	3.514016		3.512819	78	3.512951	1	3.51308
32	7	3.515211	CONTRACTOR SERVICE	The state of the s	- Sec. 82	3.514149	21	3.514282	0	3.51441
32	8	3.516539		3.515343		3.515476	54	3.515608		3 - 441
329	9 :	3-517855		3.516667	0	3.516799	7	3.5169318	GOV 12-4	3.51574
330	START OF START	3.519171		3-517987	2	3.518118	0	3.5182506	1000 1000	3.51706
331	EOR 0205 KIDA	.520483		3.519302	8 1 3	3.519434	2	3.5195655	500 S000	3.51838
332	SHEET STATE	.521791		3.520614	5 1 3	1.520745		3-5208764	86 085	3.51969
333	SHOW ME	.523095	THE RESERVE	.521922	2 2	.522052		3.5221833	600 SSSS	3.52100
334	50 D US &	524226	TOTAL SECTION	523226	o ¦ 3	.523356		.5234863	D3 (2006)	3.52231
335	NEXT BEAUT	524396	STATE STATE	524525	3 3	.5246557		-5247854		1.523616
336	3	525692	SECOND DESIGNATION	.5258219) 2	.5259513		576-9-4		1.52491
337	13	5269851	DOUGH SERVICE	5271141	1 2	5272431		.5260807	鰋	526210
	St. 100, 210	5282738	3.	5284024		5285311		5273721	3	.527501
338	3.	5295587	1 3.	5296869	- 1 -	5298152	潜艇	5286596	3	-528788
339	3.	5308398	3.	5309677	DOLLAR SERVICE	5240152	MODEL COMMAND	5299434	BIS 1920	530071
340	3.	5321171	3	5322446		5310955	1 3	5312234	1 3	531351
341	3.	5333907	13.	5335179		5323721	3.	5324996	3	532627
342	3.	346606	BOOK SERVICE IN	5347874		5336450	3.	5337721	3	533899
343	3.5	359267	13.	360532	3	5349141	3.	5350408	3.	535167
344	3.5	371892	3.4	1373153	3	5361795	1 3.	5363050	3.	5364322
345	3.5	384481	3.5	385737	3	374413	3.	5375672	2	5376932
346	3.5	397032	3.5	398286	3	386994	-3	5388250	3	5389506
347	3.5	409548	3.5	410798	3 3	399538	3.	1490791	2	5402043
348	3.5	422028	3.5	423274	3.7	412047	2.3	413296	2	414544
349	1000	434472				424519	3.1	425765	2	427910
350	3.5	446880	3.)	435714	3.5	436956	2.5	438198		
351	3.5	459253	3.)	448119	35	4492 18	2		3	439439
352	3.54	71591	3.)	460489	3.5	461724			3.5	451834
353	3.54	83894	3.)4	172823	3.5	172055	2.5		3.5	464193
354	3.54	96162	3.)4	85123	3-74	18635		THE REPORT OF THE PROPERTY AND ADDRESS.	3. 7	76317
355	3.55	08396	3)4	97387	3.54	98612		CETTER SECURIOR SING	3.14	88806
356	3.55	20595	3.72	-9018	3.55	10820	2.5	14050	3.)	01060
357	3.55	32760	3.55	21813	3.55	23027	7			13280
358	3.55	44892	3-55	33975	3.55	35180		26/16	3.35	25465
159.1	3.55	56989		46103	3.55			3	5 5 5	37617
Name and Address of the Owner, where		779	3.35	8107	1000		"看来"	建筑	2.22	49735

A TABLE of Logarithms									
Storm 1	0	1	2	3	4				
7,000	2 55 62 025	3.5564231	3.5565437	3.5566643	3.5567848				
380	3.5563025	3.5576275	3.5577477	3.5578680	3.5579881				
361	3.5587086	3.5588285	3.5589484	3.5590683	3.5591882				
362	3.5599066	3.5600262	3.5601458	3.5602654	3.5603849				
363	3.5611014	3.5612207	3.5613399	3.5614592	3.5615785				
364	3.5622929	3.5624118	3.5625308	3.5626497	3.5627685				
366	3.5634811	3.5635997	3.5637183	3.5638369	3.5639555				
367	3.5646661	3.5647844	3.5649027	3.5650209	3.5651392				
368	3.5658478	3.5659658	3.5660838	3.5662017	3.5663196				
369	3.5670264	3.5671440	3.5672617	3.5673793	3.5686710				
370	3.5682017	3.5683191	3.5684364	3.5685537	3.5698419				
371	3.5693739	3,5694910	3 5696080	3.5697249	Control of the Contro				
372	3.5705429	3.5706597	3.5707764	3.5708930	3.5710097				
373	3.5717088	3.5718252	3.5719416	3.5720580	3.5721743	表			
374	3 5728716	3.5729877	3.5731038	3.5732198	3.5733358				
375	3.5740313	3:5741471	3.5742628	3.5743786	3.5756496				
376	3.5751878	3.5753033	3.5754188	3.5755342	3.5768019	1			
377	3.5763413	3.5764565	3.5765717	315766868	3.5779511	199			
378	3:5774917	3.5776067	3.5777215	3.5778363	3.5790973				
379	3.5786392	3.5787538		3.5801263	3.5802405	3			
380	3.5797836	3.5790979		The second second	3.5813807	1			
381	3.5809250	3.5810389			3.5825179				
382	3.5820634	3.5821770	The Street Contract of the Con	000	3.5836521	23			
383	3.5831988	3.5833122		0 - (3.5847834	133			
384	3.5843312	3.584444			3.5859117	1			
385	3.5854607	3.5855739			3.5870371				
386	3.5865873	3.586699		0.0	3.5881596	r			
387	3.5877110			-0-	3 5892792	1			
388	3.5888317				3.5903959	1			
389	3.5899490				3.5915098	1			
390	3,5910646	3.591175	9 3.5912873 8 3.5923988	AND RECEIVED TO SERVICE THE RESIDENCE OF THE PARTY OF THE	3.5926208	1			
391	3.592176			10		1			
392	Marie Company of the		AND DESCRIPTIONS OF THE PROPERTY AND ADDRESS.			1			
393	THE RESIDENCE OF THE PARTY OF T		STORY OF THE PROPERTY OF THE PARTY OF THE PA	- 0 10		89 R			
1394	3.595496		4 3.595716	200	3.5970367				
395	3.596597		3.596816 8 3.597914						
396	3.597695			0.4					
397		3.598899	THE RESERVE OF THE PARTY OF THE						
398	野菜店 医克里克 医巴里斯氏征			The second secon	Children Carlotte Control Control				
399		BASIC PRODUCTION OF THE PARTY O		The second second second	3.6024941				
400	医阴茎外部 计控制设备 医二氏二氏二氏二氏二氏	日本語 (1972年 - 1972年 - 1973年 -	PERSONAL PLACE SHEET AND RECOGNIZED REPORT OF THE		3.6035771				
401	STREET, WASHINGTON, ST.	DOMERSON BURNESS OF STREET, N. P. S.		1 3.6045500	3.6046584				
403	阳原语 国际外型内地区设计 多义	The state of the s	AND THE PERSON NAMED IN COLUMN TO A PARTY OF THE PERSON	5 3.605628	3.6057359	3			
403	3.007273	2 606481			7 3.606811				

3.606381

		from 1	to 10000.		
Num.	5	6	7_1	- 8	9 1
360	3.5569053	3.5570257	3.5571461	3.5572665	3.5573869
361	3.5581083	3.5582284	3.5583485	3.5584686	3.5585886
362	3.5593080	3.5594278	3.5595476	3.5596673	3-5597870
363	3.5605044	3.5606239	3.5607433	3.5608627	3.5609820
364	3.5616975	3.5618167	3.5619358	3.5620548	3.5621739
365	3.5628874	3.5630062	3.5631250	3.5632437	3.5633624
366	3.5640740	3.5641925	3.5643109	3.5644293	3.5645477
357	3.5652573	3.5653755	3.5654936	3.5656117	3.5657298
368	3.5664375	3.5665553	3.5666731	3.5667909	3.5669087
369	3.5676144	3.5677320	3.5678494	3.5679669	3.5680843
370	3.5687882	3.5689054	3.5690226	3.5691397	3.5692568
371	3.5699588	3.5700757	3.5701926	3.5703094	3.5704262
372	3.5711263	3.5712428	3.5713594	3.5714759	3.5715924
373	3.5722906	3.5724069	3.5725231	3.5726393	3-5727555
374	3.5734518	3.5735678	3.5736837	3.5737990	3.5739154
375	3.5746099	3.5747256	3.5748412	3.5749568	3-5750723
376	3.5757650	3.5758803	3.5759956	3.5761109	3.5762261
377	3 5769169	3.5770320	3.5771470	3.5772620	3.5773769
378	3.5780659	3.5781806	3.5782953	3.5784100	3.5785246
379	3.5792118	3.5793262	3.5794406	3.5795550	3.5796693
380	3.5803547	3.5804688	3.5805829	3.5806969	3.5808110
381	3.5814945	3.5816084	3.5817222	3.5818359	3.5819497
382	3.5826314	3.5827450	3.5828585	3.5829719	3.5830854
333	3.5837654	3.5838786	3.5839918	3.5841050	3.5842181
384	3.5848963	3.5850093	3.5851222	3.5852351	3.5853479
385	3.5860244	3.5861370	3.5862496	3.5863622	3.5864748
386	3.5871495	3.5872618	3.5873742	3.5874865	3.5875987
387	3.5882717	3.5883838	3.5884958	3.5886078	3.5887198
388	3.5893910	3.5895028	3.5896145	3.5897262	3.5898379
389	3.5905075	3.5906189	3.5907304	3.5908418	3.5909532
390	3.5916210	3.5917322	3.5918434	3.5919546	3.5920657
391	3.5927318	3.5928427	3.5929536	3.5930644	3.5931753
392	3.5938397	3.5939503	3.5940609	3.5941715	3,5942820
393	3.5949447	3.5950551	3.5951654	3-5952757	3.5953860
394	3.5960470	3.5961571	3.5962671	3.5963771	3.5964871
395	3.5971465	3.5972563	3.5973560	3.5974758	
396	3.5982432	3.5983527	3.5984622	3.5985717	
397	3.5993371	3.5994464	3.5995556		
398	3.6004283	3.6005373	3.6006462	3.6007551	3.6008640
399	3.6015168	3.6016255	3.6017341	3.6018429	
400	3.6026025	3.6027109	3.6028193		
401	3.6036855	3.6037937	3.6039018	3.6040099	
402	3.6047659	3.6048738	3.6049816		
403	3.6058435	3.6059512	3.6060587	3.6061663	EX. NO REPORTS BUILDING PARTY OF
404	3.6069185	13.6070259	13.6071332	1 3.6072405	1 3:6073478

20	PRIA.	20.1	1.0	1	de la	
236	TV	B I	<u> </u>	70	SUM	THE PERSON NAMED IN

Num		1	2	3	4
405	3.6074550	3.6075622	3.6076694	3.6077766	3.6078837
406	3.6085260	3.6086330	3.6087399	3.6088468	3.6089537
407	3.6095944	3.6097011	3.6098078	3.6099144	3.6000210
408	3.6106602	3.6107666	3.6108730	3.6109794	3.6110857
409	3.6117233	3.6118295	3.6119356	3.6120417	3.6121478
410	3.6127839	3.6128898	3.6129957	3.6131015	3.6132073
411	3.6138418	3.6139475	3.6140531	3.6141587	3.6142643
412	3.6148972	3.6150026	3.6151080	3.6152133	3.6153187
413	3.6159501	3.6160552	3.6161603	3 6162654	3.6163705
414	3.6170003	3.6171052	3.6172101	3 6173149	3.6174197
415	3.6180481	3.6181527	3.6182573	3.6183619	3.6184665
416	3.6190933	3.6191977	3.6193021	3.6194064	3.6195107
NAME OF TAXABLE PARTY.	PARTIE DE LA CONTRACTOR			5	A STATE OF THE PARTY OF THE PAR
417	3.6201360	3.6202402	3.6203443	3.6204484	3.6205524
418	3.6211763	3.6212802	3.6213840	3.6214879	3.6215917
419	3.6222140	3.6223177	3.6224213	3.6225249	3.6226284
420	3.6232493	3,6233527	3.6234560	3.6235594	3.6136617
421	3.6242821	3.6243852	3.6244884	3.6245915	3.6246945
422	3.6253124	3.6254153	3.6255182	3.6256211	3.6257239
423	3.6263404	3.6264430	3.6265457	3.6266483:	3.6267509
424	3.6273.659	3.6274683	3.6275707	3.6276730	3.6277754
423	3.6283889	3.6284911	3.6285933	3.6286954	3.6287975
426	3.6294096	3.6295115	3.6296134	3.6297153	3.6298172
427	3.6304279	3.6305296	3.6306312	3.6307329	3.6308345
428	3.6314438	3.6315452	3.6316467	3.6317481	3.6318495
429	3.6324573	3.6325585	3 6326597	3.6327609	3.6328620
430	3.6334685	3.6335694	3.6336704	3.6337713	3.6338723
431	3.6344773	3.6345780	3.6346788	3.6347795	3.6348801
432	3.6354837	3.6355843	3.6356848	3.6357852	3.6358857
433	3.6364879	3.6365882	3.6366884	3.6367887	3.6368889
434	3.6374897	3.6375898	3.6376898	3.6377898	3.6378898
435	3.6384893	3.6385891	3.6386889	3.6387887	.3.6388884
436	3.6394865	3.6395861	3.6396857	3.6397852	3.6398847
437	3.6404814	3.6405808	3.6406802	3.6407795	3.6408788
438	3.6414741	3.6415733	3.6416724	3.6417715	3.6418705
439	3.6424645	3.6425634	3.6426623	3.6427612	3.6428601
440	3.6434527	3.6435514	3.6436500	3.6437487	3.6438473
441	3.6444386	3.6445371	3.6446355	3.6447339	3.6448323
442	3.6454223	3.6455205	3.6456187	3.6457169	
443	3.6464037	3.6465017	3.6465997	3.6466977	3.6467957
444	3.6473830	3.6474808	3.6475785	3.6476763	
	3.6483600	3.6484570	3.6485552	3.6486527	3.6487502
445	3.6493349	3.6494322	3.6495296	3.6496269	3.6497242
A PRODUCTION OF THE PROPERTY O	3.6503675	3.6504047	3.6505018	3.6505989	3.6506960
447	3.6512780	3.6513749	3.6514719	3.6515687	3.6516656
448	3.6522463	3.6523430	3.6524397	3.6525364	3.6526331
449	E (10) (2240)	3.0123430	1 3.0 124391	30-1-73-4	

			100	100	200
tro					

Nam.	5	6	7	8	9
405	3.6079909	3,6080979	3.6082050	3.6083120	3.6084190
406	3.6090605	3.6091674	3.6092742	3.6093809	3.6094877
407	3.6101276	3.6102342	3.6103407	3.6104472	3.6105537
408	3.6111921	3.6112984	3.6114046	3.6115109	3.6116171
409	3,6122539	3.6123599	3.6124660	3.6125720	3.6126779
410	3.6133132	3.6134189	3.6135247	3.6136304	3.6137361
411	3.6143698	3.6144754	3.6145809	3.6146863	3.6147918
412	3.6154240	3.6155292	3.6156345	3.6157397	3.6158449
413.	3.6164755	3.6165805	3.6166855	3.6167905	3.6168954
414	3.6175245	3.6176293	3.6177340	3.6178387	3.6179434
4.15	3 61857.10	3.6186755	3.6187800	3.6188845	3.6189889
416	3.6196150	3.6197193	3.6198235	3.6199277	3.6200319
4.17	3.6206565	3.6207605	3.6208645	3.6209684	3.6210724
418	3.6216955	3.6217992	3.6219034	3.6220067	3.6221104
419	3.6227320	3.6228355	3.6229390	3.6230424	3.6231459
420	3.6237660	3.6238693	3.6239725	3.6240757	3.6241789
421	3.6247976	3.6249006	3.6250036	3.6251066	3.6252095
422	3.6258267	3.6259295	3.6260322	3.6261350	3.6262377
423	3.6268534	3.5269559	3 6270585	3.6271610	3.6272634
424	3.6278777	.3.6179800	3.6280823	3.6281845	3.6282867
425	3.6288996	3.6290916	3.6291036	3.6292057	3.6293076
426	3.6299190	3.6300208	3.6301226	3.6302244	3.6303262
427	3.6309361	3.6310377	3.6311392	3.6312408	3.6313423
428	3.6319508	3.6320522	3.6321535	3.6322548	3.6323560
429	3.6329632	3.6330643	3.6331359	3.6332664	3.6333674
430	3.6339732	3.6340740	3 6341749	3 6342757	3.6343765
431	3.6349808	3.6350814	3.6351800	3.6352826	3 6353832
432	3.6359861	3.6360865	3.6361869	3,6362872	3.6363870
433	3.6369891	3.6370893	3.6371894	3,6372895	3.6373896
434	3.6379898	3.6380897	3.6381896	3.6382895	3.6383894
435	3.6389882	3.6390879	3.6391876	3 6392872	3.6393869
436	3.6399842	3.6400837	3.6401832	3.6402826	3.6403820
437	3.6409781	3,64107.73	3.6411765	3.6412758	3 6413749
438	3.6419696	3.6420686	3.6421676	3.6422666	3.6423656
439	3.6429589	3.6430577	3 6431 565	3.6432552	3.6433540
440	3.6439459	3.6440445	3.644143.1	3.6442416	3.6443401
441	3.6449307	3.5450291	3.6451274	3.6452257	3.6453240
442	3.6459133	3.6460114	3.6461095	3.6462076	3.6463057
443	3.6468936	3.6469915	3.6470894	3.6471873	3.6472851
444	3.6478718	3.6479695	3.6480671	3.6481648	3:6482624
445	3.6488477	3.6499187	3.6490426	3.6491401	3.6502104
446	3.6498215	3.6508901	3.6509871	3.5510841	3.6511811
447	3.6517624	3.6518593	3.6519561	3.6520528	3.6521496
449	3.6527297	3.6528263	3.6529229	3.6530195	3.6531160
449	3,0,2/29/	3.0320203	3.072424	(19,519,51	

以表示。(2) (2) (2) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		accompanion and	DOM:		
ACCOUNTS OF THE PARTY OF	33 (375) 033	EL PRINC	75 1200	F RESERVED STREET	AND DESCRIPTION
ATA	88 S 400 GG	ED LACON	0 1 655	B SECULATION S IS	irnme
	and the second second	100,000	hada000	TANK BOY	PERSONAL PROPERTY

Nion.	1 0 1	I A B.I. E	2	3	4
450	3.6532125	3.6533090	3.6534055	3.6535019	3.6535984
451	3.6541765	3.6542728	3.6543691	3.6544653	3.6545616
452	3.6551384	3.6552345	3.6553306	3.6554266	3.6555226
453	3.6560982	3.6561941	3.6562899	3.6563857	3.6564815
454	3.6570559	3.6571515	3.6572471	3.6573427	3.6574383
455	3.6580114	3.6581068	3.6582023	3.6582976	3.6583930
456	3.6589648	3.6590601	3.6591553	3.65,92505	3.6593456
457	3.5599162	3.6600112	3.6601062	3.6602012	3.6602962
458	3.6608655	3.6609603	3.6610551	3.6611499.	3.6612446
459	3.6618127	3.6619073	3.6620019	3.6620964	3.6621910
460	3.6627578	3.6628522	3.6629466	3.6630410	3.6631353
461	3.6637009	3.6637951	3.6638893	3.6639835	3.6640776
462	3.6646420	3.6647360	3.6648299	3.664 9239	3.6650178
463	3.6655810	3.6656748	3.6657685	3.6658623	3.6659560
464	3.6665180	3.6666116	3.6667051	3.6667987	3.6668922
465	3.6674530	3.6675463	3.6676397	3.6677331	3.6678264
466	3.6683859	3.6684791	3.6685723	3.6686654	3.6687585
467	3.6693169	3.6694099	3.6695028	3.6695958	3.6696887
468	3.6702459	3.6703386	3.6704314	3.6705242	3.6706169
469	3.6711728	3.6712654	3.6713580	3.6714506	3.6715431
470.		3.6721903	3.6722826	3.6723750	3.6724673
471	3.6730209	3.6731131	3.6732053	3.6732974	3.6733896
472	3.6739420	3.6740340	3.6741260	3.6742179	3.6743099
473	3.6748611	3.6749529	3.6750447	3.6751365	3.6752283
474	3.6757783	3.6758700	3.6759615	3.6760531	3.6761447
475	3.6766936	3.6767850	3-6768764	3.6769678	3.6770592
476	CONTROL OF THE PROPERTY OF THE	3.6776982	3.6777894	3.6778806	3.6779718
477	3.6785184	3.6786094	3.6787004	3.6787914	3.6788824
478	3.6794279	3.6795187	3.6796096	3.6797004	3.6797912
479	3.6803355	3.6804262	3.6805168	3.6806074	3.6806980
480		3.6813317	3.6814222	3.6815126	3.6816030
481	3.6821451	3.6822354	3.6823256	3.6824159	3.6825061
482	3.6830478	3.6831371	3.6832272	3.6833173	3.6834073
483		3.6840370	3.6841269	3.6842168	3.6843066
484		3.6849351	3.6850248	3.6851145	3.6852041
485	SECURIO STATE ACCOUNT SECURIOR SE ALCONOMICA DE LA CASA DA LA CASA DE LA CASA DEL CASA DE LA CASA D	3.6858313	3.6859208	3.6860103	3.6860998
486	3.6866363	3.6867256	3.6868149	3.6869043	3.6869936
487	3.6875290	3.6876181	3.6877073	3.6877964	3.6878855
488	3.6884198	3.6885088	3.6885978	3.6886867	3.6887757
489	3.6893089	3.6893977	3.6894864	3.6895752	3.6896640
490		3.6902847	3.6903733	3.6904619	3.6905505
491		3.6911699	3.6912584	3.6913468	3.6914352
490		3.6920;34	3.6921416	3.6922298	3.6923180
493	SERVICE SPECIAL PROPERTY AND ADDRESS OF THE PARTY.	3.6929350	3.6930231	3.6931111	3.6931991
494	THE RESERVE OF THE PARTY OF THE	3.6938148	3.6939027	3.6939906	3.6940785

	-	from	1 to 10000.	1	
Num.	5	6	7	8 1	9
450	3.6536948	3.6537912	3.6538876	3.6539839	3.5540802
451	3 6546578	3.6547539	3.6548501	3.6549462	3.6550423
452	3.6556185	3.6557145	3 6558105	3.6559264	3.6560023
453	3.6565773	3.6566730	.3 6557688	3.6558645	3.6569692
454	3.6575339	3.6576274	3.6577250	3.6578205	3.6579159
455	3.6584884	3.6585837	3.6586790	3 6587743	3.6588696
456	3.6594408	3.6595359	3.6596310	3.6597251	3.6598212
457	3.6603911	3.6604850	3.6615287	3 6616234	3.6617181
458	3.6613393	3.6623800	3.6624745	3.5625690	3.6626634
459	3.6632296	3.6633239	3.5634182	3.6635125	3.6636067
461	3.6641717	3.6642658	3.6643599	3.6644539	3.6645480
-	3.6651117	100000000000000000000000000000000000000	3.6652995	3.6653933	3.6654872
462	3.6660497	3.6651434	3.6662371	3.6663307	3.6664244
463	3.6669857	3.6670792	3:6671727	3.5672661	3.6673595
464	3.6679197	3.6680130	3.6681062	3.6681995	3.6682927
466	3.6688516	3.6689447	3.6590378	3.6691308	3.6692239
467	3.6697816	3.6698745	3.6699674	3.6700602	3.6701530
468	3.6707096	3.6708023	3.5708950	3.67098.76	3.6710802
469	3.6716356	3.6717281	3.6718206	3.6719130	3.6720054
470	3:6725596	3.6726519	3.6727442	3.6728365	3.6729287
471	3.6734817	3:6735738	3.6736659.	3.6737579	3.6738500
472	3.6744018	3 6744937	3.6745856	3.6746775	3.6747693
473	3.6753200	3.6754117	3.6755034	3.6755951	3.6756867
474	3.6762362	3.6763277	3.6764192	3.6765107	3.6766022
475	3.6771505	3.6772418	3.6773332	3.6774244	
476	3.6780629	3.6781540	3.6782452		
477	3.6789734	3.6790643	3.6791552		3.6793370
478	3.6798819	3.6799727	3.6800634	THE RESERVE OF THE RESERVE OF THE PARTY OF T	3.6802448
479	3.6807386	3.6808792	3.6818741	3.6810602	3.6811507
480	3.6816934	3.6826865	3.6827766	3.6828668	3.6829569
482	3.6834972	3.6835873	3.6836773	A CONTRACTOR OF THE PROPERTY O	3.6838572
483	3.6843965	3.6844863		3.6846659	
-	3.6852938	3.6853834	St. Stagestonesson		
484	3.5861892	3.6862787		3.6864575	3.6865469
486	3.6870828		THE RESERVE AND ADDRESS OF THE PARTY OF		3.6874398
487	3.6879746				
488	3.6888646	THE LOW PROPERTY AND ADMINISTRATION OF THE PARTY OF THE P	3.6890423	3.6891312	
489	3.6897527	3.6898414	3.6899301	3.6900188	
490	3.6906390	3.6907275	3.6908161	3.6909046	
491	3.6915235				
492	3.6924062	3.6924944			
493	3.6932872				
1 494	1 3.6911663	1 3.6942541	1 3.6943419	3.694429	3.6945174

A TABLE of Logarithms

Num.	0 1	LADL	2	3	4
495	3.6946051	3.6946929	3.6947806	3.6948683	3.6949560
496	3.6954817	3.6955692	3.6956568	3.6957443	3.6958318
497	3.6963564	3.6964438	3.6965311	3.6966185	3.6967058
498	3.6972293	3.6973155	3.6974037	3.6974909	3.6975780
499	3.6981005	3.6981876	3.6982746	3.6983616	3.6984485
500	3.6989700	3.5990569	3.6991437	3.6992305	3.6993173
501	3.6998377	3.5999244	3.7000111	3.7000977	3.7001843
502	3.7007037	3.7007902	3.7008767	3.7009632	3.7010496
503	3.7015680	3.7016543	3.7017406	3.7018269	3.7019132
504	3.7024305	3.7025167	3.7026028	3.7026890	3.7027751
505	3.7032914	3.7033774	3.7034633	3.7035493	3.7036352
506	3.7041505	3.7042363	3.7043221	3.7044079	3.7044937
507	3.7050080	3.7050936	3.7051792	3.7052649	3.7053505
508	3.7058637	3.7059492	3.7060347	3.7061201	3.7062055
509	3.7067178	3,7068030	3.7068884	3.7069737	3.7070589
510	3.7075702	3.7076553	3.7077405	3.7078256	3.7079107
511	3.7084209	3.7085059	3.7085908	3.7086758	3.7087607
512	3.7092700	3.7093548	3.7094396	3.7095244	3.7096091
213	3.7101174	3.7102020	3.7102866	3.7103713	3.7104559
514	3.7109631	3-7110476	3.7111321	3.7112165	3.7113010
515	3.7118072	3.7118915	3.7119759	3.7120601	3.7121444
516	3.7126497	3.7127339	3.7128180	3.7129021	3.7129862
517	3.7134905	3.7135745	3.7136585	3.7137425	3.7138264
518	3.7143298	3.7144136	3.7144974	3.7145812	3.7146650
519	3.7151674	3.7152510	3.7153347	3.7154183	3.7155019
520	3.7160033	3.7160869	3.7161703	3.7162538	3.7163373
521	3.7168377	3.7169211	3.7170044	3.7170877	3.7171710
522	3.7176705	3.7177537	3.7178369	3.7179200	3.7180032
524	3.7193313	3.7194142	3.7194970	3.7195799	3.7196627
525	3.7201593	3.7202420	3.7203247	3.7204074	3.7204901
526	3.7209857	3.7210683	3.7211508	3.7212334	3.7213159
527	3.7218106	3.7218930	3-7219754	3.7220578	3.7221401
528	3:7226339	3.7227162	3.7227984		3.7229628
529	3-7234557	3-7235378	3.7236198	3.7237019	3.7237839
530	3.7242759	3.7243578	3.7244397		3.7246035
531	3.7250945	3.7251763	3.7252581	3.7253398	3.7254215
532	3.7259116	THE RESTRICTION FOR THE PARTY OF THE PARTY O	3.7260749		3.7262380
533	3.7267272	3.7268087	3.7268901	3.7269716	3-7270531
534	3.7275413	3.7276226			3.7278664
135	3.7283538	3.7284349	3.7285161		3.7286784
536	3.7291648		3.7293268		3-7294888
537	3.7299743	3.7300951	3.7301360		3.7302977
138	3.7307823	THE RESIDENCE PRODUCTION OF THE PROPERTY OF	3.7309437		3.7311051
1539	3.7315888	3.7316693	3.7317499	3.7318304	3.7319109

from 1 to 10000.							
Num.	5	6	7	8 1	9		
495	3.6950437	3.6951311	3.6952189	3.6953065	3.6953941		
496	3.6959193	3.6960067	3.6960942	3.6961816	3.6962690		
497	3.6967931	3.6968804	3.6969676	3.6970549	3.6971421		
498	3.6976652	3.6977523	3.6978394	3.6979264	3.6980135		
499	3.6985355	3.6986224	3.6987093	3.6987963	3.6988831		
500	3.6994041	3.6994908	3.6995776	3.6996643	3.6997510		
501	3.7002709	3.7003575	3.7004441	3.7005307	3.7006172		
502	3.7011361	3.7012225	3.7013089	3.7013953	3.7014816		
503	3.7019995.	3.7020857	3.7021719	3.7022582	3.7023444		
504	3.7028612	3.7029472	3.7030333	3.7031193	3.7032054		
505	3.7037212	3.7033071	3.7038929	3.7039788	3.7040647		
506	3.7045794	3.7046652	3.7947509	3.7048366	3-7049223		
507	3.7054360	3.7055216	3.7056072	3.7056927	3.7057782		
508	3.7062910	3.7063764	3.7064617	3.7065471	3.7066324		
509	3.7071442	3.7072294	3.7073146	3.7073998	3.7074850		
510	3.7079957	3.7080808	3.7081659	3.7082509	3.7083359		
511	3.7088456	3.7089305	3.7090154	3.7091003	3.7091851		
512	3.7096939	3-7097786	3.7098633	3.7099480	3.7100327		
513	3.7105404	3.7105250	3.7107096	3.7107941	3.7108786		
514	3.7113854	3-7114698	3.7115542	3.7116385	3.7117229		
515	3.7122287	3.7123129	3.7123971	3.7124813	3.7125655		
516	3.7130703	3.7131544	3.7132385	3.7133225	3.7134065		
517	3.7139104	3.7139943	3.7140782	3.7141620	3.7142459		
518	3-7147488	3.7148325	3.7149162	3.7150000	3.7150837		
519	3.7155856	3.7156691	3.7157527	3.7158363	3.7159198		
520	3.7164207	3.7165042	3.7165876	3.7166710	3.7167544		
521	3.7172543	3.7173376	3.7174208	3.7175041	3.7175873		
522	3.7180863	3.7181694	3.7182525	3.7183356	3.7184186		
523	3.7189167	3.7189996	3.7190826	3.7191655	3-7192484		
524	3-7197455	3.7198283	3.7199111	3.7199938	3:7200766		
525	3.7205727	3.7206554	3.7207380	3.7208206	3.7209032		
526	3.7213984	3.7214809	3.7215633	3.7216458	3.7217282		
5.27	3.7222225	3.7223048	3.7223871	3.7224694	3.7225517		
528	3.7230450	3.7231272	3.7232093	3.7232914	3.7233736		
529	3.7238660	3.7239480	3.7240300	3.7241120	3.7241939		
530	3.7246854	3.7247672	3.7248491	3.7249309	3.7250127		
531	3.7255033	3.7255850	3.7256667	3.7257483	3-7258300		
532	3.7263196	3.7264012	3.7264827	3.7265642	3.7266457		
533	3.7271344	3.7272198	3.7272972	3.7273786	3.7274699		
534	3.7279477	3.7280290	3.7281101	3.7281914			
535	3.7287595	3.7288406	3.7289216	3.7290027			
536	3.7295697	3.7296507	3.7297316		3.7298934		
537	3.7303785	3.7304593	3.7305400	3.7306208	3.7307015		
538	3.7311857	3.7312663	3.7313470		3.7315082		
539	3.7319914	3.7320719	3.7321524	3.7322329	3.7323133		

SALES OF SALES	1000		7727	
of Today of	AR	B 828 19	Ot	Logarithms
	L L	/L. 14		Coka intimo

Num.	NAME OF THE PARTY	IABLE	MINING THE RESIDENCE OF THE PARTY OF THE PAR	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
The second second	-	L	2	3	4
540	3.7323938	3.7324742	3.7325546	3.7326350	3.7327153
541	3.7331973	3.7332775	3.7333578	3.7334380	3.7335182
542	3.7339993	3-7340794	3.7341595	3.7342396	3.7343197
543	3-7347998	3.7348798	3.7349598	3.7350397	3.7351196
544	3.7355989	3.7356787	3.7357585	3.7358383	3.7359181
545	3.7363965	3.7364762	3.7365558	3.7366355	3.7367151
546	3.7371926	3.7372722	3.7373517	3.7374312	3.7375107
547	3.7379873	3.7380667	3.7381461	3.7382254	3.7383048
548	3.7387806	3-7388595	3.7389390	3.7390182	3.7390974
549	3.7395723	3.7396514	3.7397305	3.7398096	3.7398886
550	3.7403627	3.7404416	3.7405206	3.7405995	3.7405784
551	3.7411516	3.7412304	3.7413092	3.7413880	3.7414668
552	3.7419391	3.7420177	3.7420964	3.7421750	3.7422537
553	3.7427251	3.7428037	3.7428822	3.7429607	-3.7430392
554	3.7435098	3.7435881	3.7436665	3.7437449	3.7438232
555	3.7442930	3-7443712	3.7444495	3.7445277	3.7446059
556	3.7450748	3.7451529	3.7452310	3.7453091	3.7453871
557	3.7458552	3.7459332	3.7460111	3.7460890	3.7461670
558	3.7466342	3.7467120	3.7467898	3.7468676	3.7469454
559	3.7474118	3.7474895	3.7475672	3.7476448	3.7477225
560	3.7481880	3.7482656	3.7483431	3.7484206	3.7484981
561.	3.7489629	3.7490403	3.7491177	3.7491950	3-7492724
562	3 7497363	3.7498136	3.7498908	3.7499681	3.7500453
563	3.7505084	3.7505855	3.7506626	3.7507398	3.7508168
564	3.7512791	3.7513561	3.7514331	3.7515100	3.7515870
565	3.7520484	3.7521253	3.7522022	3.7522790	3.7523558
566	3.7528164	3.7528932	3.7529699	3.7530466	3.7531232
567	3.7535831	3.7536596	3.7537362	3.7538128	3.7538893
568	3.7543483	3.7544248	3.7545012	3.7545777	3.7546541
569	3.7551123	3.7551886	3.7552649	3.7553412	3.7554175
570	3.7558749	3.7559510	3.7560272	3.7561034	3.7561795
571	3.7566361	3.7567122	3.7567882	3.7568642	3.7569402
572	3.7573960	3.7574719	3.7575479	3.7576237	3.7576996
573	3-7581546	3.7582304	3.7583062	3.7583819	3.7584577
574	3.7589119	3.7589875	3.7590632	3.7591388	3.7592144
575	3.7596678	3.7597434	3.7598189	3.7598944	3.7599699
576	3.7604225	3.7604979	3.7605733	3.7606486	3.7607240
\$77	3.7611758	3.7612511	3.7613263	3.7614016	3.7614768
578	3.7619278	3.7620030	3.7620781	3.7621532	3.7622283
579	3.7626786	3.7627536	3.7628286	3.7629035	3.7629785
580	3.7534280	3.7635029	3.7635777	3.7636526	3.7637274
581.	3.7641761	3.7642509	3.7643256	3.7644003	3.7644750
582	3.7649230	3.7649976	3.7650722	3.7651468	3.7652214
583	3.7656686	3,7657430	3.7658175	3.7658920	3.7659664
1584	3.7664128	3.7664872	3.7665616	3.7666359	3.7667102

44		from · r	tO 10000.		
Num.	5	6	7	- 8	9
540	3.7327957	3.7328760	3.7329564	3.7330367	3.7331170
541	3.7335985	3.7336787	3.7337588	3.7338390	3.7339191
542	3.7343997	3.7344797	3.7345598	3-7346398	3.7347198
543	3.7351995	3.7352794	3.7353593	3.7354392	3.7355191
544	3-7359979	3.7360776	3.7361574	3.7362371	3.7353168
545	3.7367948	3.7368744	3.7369540	3.7370335	3.7371131
546	3.7375902	3.7376696	3.737749	3.7378285	3-7379079
547-	3.7383841	3.7384634	3.7385427	3.7386220	3.7387013
548	3.7391766	3.7392558	3.7393350	3.7394141	3.7394932
549	3.7399677	3.7400467	3.7401257	3.7402047	3.7402837
550	3.7407573	3.7408362	3.7409151	3.7409939	3.7410728
551	3.7415455	3.7416243	3.7417030	3.7417817	3.7418604
592	3.7423323	3.7424109	3.7424895	3.7425680	3.7426466
553	3.7431176	3.7431961	3.7432745	3.7433530	3.7434314
554	3.7439015	3.7439799	3.7440582	3.7447365	3.7442147
555	3.7446841	3.7447622	3.7448404	3.7449185	3-7449967
556	3.7454652	3-7455432	3.7456212	3.7456992	3.7457772
557	37462449	3.7463228	3.7464006	3.7464785	3.7465564
558	3.7470232	3.7471009	3.7471787	3.7472564	3-7473341
559	3.7478001	3.7478777	3.7479553	3.7480329	3.7481105
560	3.7485756	3.7486531	3.7487306	3.7488080	3.7488854
561	3.7493498	3.7494271	3.7495044	3.7495817	3.7496590
562	3.7501225	3.7501997	3.7502769	3.7503541	3.7504312
563	3.7508939	3.7509710	3.7510480	3.7511254	3.7512021
564	3.7516639	3.7517409	3.7518178	3.7518947	3.7519716
565	3.7524326	3.7525094	3.7525862	3.7526629	3.7527397
566	3.7531999	3.7532766	3-7533532	3.7534292	3.7535065
557	3.7539659	3.7540424	3.7541189	3-7541954	3.7542719
568	3.7547305	3.7548069	3.7548832	3.7549596	3.7550359
569	3.7554937	3-7555700	3.7556462	3.7557224	3.7557987
570	3.7562556	3.7563318	3.7564079	3.7564840	3.7565600
571	3.7570162	3.7570922	3.7571682	3.7572441	3.7573201
572	3.7577755	3.7578513	3.7579272	3.7580030	3.7580788
573	3.7585334	3.7586091	3.7586848	3.7587605	3.7588362
574	3.7592900	3.7593656	3-7594413	3.7595168	3.7595923
575	3.7600453	3.7601208	3.7601962	3.7602717	3.7603471
576	3.7607993	3.7608746	3.7609500	3.7610253	3.7611005
577	3.7615520	3.7616272	3.7617024	3.7617775	3.7618527
578	3.7623034	3.7623784	3.7624535	3.7625285	3.7626035
579	3.7630534	3.7631284	3.7632033	3.7632782	3.7633531
580	3:7638022	3.7638770	3.7639518	3.7640266	3.7641014
581	3.7645497	3.7646244	3.7646991	3.7647737	3.7648484
582	3.7652959	3.7653705	3.7654450		
533	3.7660409	3.7661153	3.7661897		3.7663385
584	3.7667845	3.7668588	3.7669331	3.7670074	1-2.7670816

A T	A B	LE	of	Logar	thins
ALL PROPERTY AND PROPERTY.	PARTICIPATION OF THE PARTY OF T	THE RESERVE OF	POSITION PROPERTY.	THE TOTAL PROPERTY OF THE	PRINCIPAL SECTION OF

Num.	0.1	I	2	3	4
585	3.7671559	3.7672301	3.7673043	3.7673785	3.7674527
586	3.7678976	3.7679717	3.7680458	3.7681199	3.7681940
587	3.7686381	3.7687121	3.7687860	3.7688600	3.7689339
588	3:7693773	3.7694512	3.7695250	3.7695988	3.7696727
589	3.7701153	3.7701890	3.7702627	3.7703364	3.7704101
590	3.7708520	3.7709256	3.7709992	3.7710728	3.7711463
591	3.7715875	3.7716610	3.7717344	3.7718079	3.7718813
592	3.7723217	3-7723951	3.7724684	3.7725417	3.7726150
593	3.773 > 547	3.7731279	3.7732011	3.7732743	3.7733475
594	3-7737864	3.7738596	3.7739326	3.7740057	3-7740788
595	3.7745170	3.7745899	3.7746629	3.7747359	3.7748088
596	3.7752463	3 7753191	3.7753920	3.7754648	3.7755375
597	3.7759743	3.7760471	3.7761198	3.7761.925	3.7762652
598	3.7767012	3.7767738	3.7768464	3.7769190	3-7769916
599	3.7774268	3.7774993	3.7775718	3.7776443	3.7777167
600	3.7781513	3.7782236	3.7782960	3.7783683	3.7784407
1001	3.7788745	3.7789467	3.7790190	3.7790912	3.7791634
602	3-7795905	3.7796686	3.7797408	3.7798129	3.7798850
603	3.7803173	3 7803893	3.7804613	3.7805333	3.7806053
604	3.7810369	3.7811088	3.7811807	3.7812526	3.7813245
605	3.7817554	3.7818272	3.7818989	3.7819707	3.7820424
606	3.7824726	3.7825443	3.7826159	3.7826876	3.7827592
607	3.7831887	3.7832602	3.7833318	3.7834033	3.7834748
608	3.7839035	3.7839750	3.7840464	3.7841178	3.7841892
609	3.7846173	3.7846886	3.7847599	3.78483.11	3.7849024
610	3.7853,298	3.7854010	3.7854722	3.7855434	3.7856145
611	3.7860412	3.7861123	3.7861833	3.7.862544	3.7863254
612	3.7867514	3.7868224	3.7868933	3.7869643	3.7870352
613	3.7874605	3.7875313	3.7876021	3.7876730	3.7877438
614	3.7881683	3.7882391	3.7883098	3.7883805	3.7884512
615	3.7888751	3.7889457	3.7890163	3.7890869	3.7891575
616	3.7895807	3.7896512	3.7897217	3.7897922	3.7898626
617	3.7902852	3.7903555	3-7904259	3.7904963	3.7905666
618	3.7909885	3.7910587	I I British and the second	3.7911992	3.7912695
619	3.7916906	3.7917608	3.7918309	3,7919011	3 7919712
620	3.7923917	3.7924617	3.7925318	3.7926018	3.7926718
621	3.7930916	3.7931615	3.7932314	3.7933014	3.7933712
622	3.7937904	3,7938602	3.7939300	3.7939998	3.7940696
623	3.7944880	3.7945578	3.7946274	3.7946971	3.7947668
624	3.7951846	3,7952542	3.7953238	3.7953933	3.7954529
625	3.7958800	3.7959495	3.7960190	3.7960884	3.7961578
616	3.7965743	3.7966437	3.7967131	3.7967824	
617	3.7972675	3-7973368	3.7974060	3.7974753	3.7975445
数。42700日的原则	3.7979595	3.7980288	3.7980979	3.7981671	3.7982362
1629	3.7986506	3.7987197	3.7987887	3.7988577	3.7989267

		from 1	to 1000c.		
Num.		6	7	8 1	9
585	3.7675269	3.7676011	3.7676752	3.7677492	3.7678235
- 586	3.7682680	3.7683421	3.7684161	3.7684901	3.7685641
587	3.7690079	3.7690818	3.7691557	3.7692296	3.7693035
588	3.7697465	3.7698203	3.7698940	3,7699678	3-7700416
589	3.7,704838	3.7705575	3.7706311	3.7707048	3.7707784
590	3.7712199	3.7712934	3.7713670	3.7714405	3.7715140
591	3.7719547.	3.7720282	3.7721016	3.7721750	3-7722483
592	3.7726884	3.7727616	3.7728349	3.7729082	3.7729814
.593	3.7734207	3-7734939	3.7735670	3.7736402	3-7737133
594	3.7741519	3.7742249	3.7742979	3.7743710	3-7744440
595	3.7748818.	3.7749547	3.7757560	3.7758288	3.7759010
595	3.7756104	3.7756832	The state of the s		
597	3.7763379	3.7764106	3.7764833	3.7765559	3.7766286
598	3.7770642	3.7771367	3.7772093	3.7772818	3.7773543
599	3.7777892	3.7778616	3.7779340	3 7780065	3.7780789
1600	3.7785130	3.7785853	3.7786576	3 7787299	3.7788022
601.	3.7792356	3.7793078	3.7793800	3.7794522	3.7795243
602	3-7799571	3.7800291	3.7801012	3.7801732	3.7802453
603	3.7806773	3.7807492	3 7808212	3.7816118	3.7816836
604	3-7813963	3.7814681	3.7815400	3.7823293	3.7824010
605	3-7821141	3.7821859	3.7822576	3.7830456	3.7831171
606	3-7828308	3.7829024	3.7829740	3.7837607	3.7838321
607	3.7835463	3.7836178	3.7836892		
608	3.7842606	3.7843319	3.7844033	3-7844746	3.7845460
609	3.7849737	3.7850450	3.7851162	3.7851874	3.7852586
610	3.7856857	3.7857568	3 7858279	3.7858990	3.7859701
611	3.7863965	3.7864675	3.7865385	3.7866095	3.7873896
612	3.7871861	3.7871770	3.7872479	3.7880269	3.7880976
613	3-7878146	3.7878853	3.7879561	3 7887339	3.7888045
614	3.7885219	3.7885926	3.7893691	3 7894397	3.7895102
615	3.7892281	3.7892986	3.7900739	3.7901444	3.7902148
617	3.7899333	3.7907073	3.7907776	3.7908479	3 7909182
618	3.7906370	3.7914099	3.7914801	3.7915503	3 7916205
-	3.7913397	A COLOR MANAGEMENT CONTRACTOR OF THE CO.	All the same of th		A company or market and a second
619	3.7920413	3.7921114	3.7921815.	3.7929517	3.7923216
620	3.7927418	3.7928118	3.7935809	3.7936507	3.7937206
622	3.7934411	3.794209.1	3-7942789	3.7943486	3.7944183
623	3.7941394	3.7949061	3.7949757	3.7950454	3.7951150
624	3.7955324	3.7956020	3.7956715	3.7957410	3.7958106
625	3.7962273	3.7962967	3.7963662	3.7964356	3:7965050
626	3.7969211	3.7969904	3.7970597	3.7971290	3.7971983
627	3.7976137	3.7976829		3.7978213	
628	3.7983053	3.7983744		3.7985125	
629	3.7989957	3.7990647	3.7991337	3.7992027	3.7992716

	A TABLE of Logarithms								
Num.	0	I a	2	3 4 40 9	4				
630	3.7993495	3-7994095	3.7994784	3-7995473	3.7996162				
631	3.8000294	3.8000982	3.8001670	3.8002358	-3.8003046				
632	3.8007171	3.8007858	3.8008545	3.8009232	3.8009919				
633	3.8014037	3.8014723	3.8015409 1	3.8016095	3.8016781				
634	3.8020893	3.8021578	3.8022262	3.8022947	3.8023632				
635	3.8027737	3.8028421	3.8029105	3.8029789	3 8030472				
636	3.8034571	3.8035254	3.8035937	3.8036619	3.8037302				
637	3.8041394	3.8042076	3.8042758	3.8043439	3.8044121				
638	3.8048207	3.8048887	3.8049568	3.8050248	3.8050929				
639	3.8055009	3 8055688	3.8056368	3.8057047	3.8057726				
640	3.8061800	3.8062478	3.8063157	3.8063835	3.8064513				
641	3.8068580	3.8069258	3.8069935	3.8070612	3.8071290				
642	3.8075350	3.8076027	3.8076703	3.8077379	3.8078055				
643	3.8082110	3.8082785	3.8083460	3.8084136	3.8084811				
644	3.8088859	3.8089533	3.8090207	3.8090881	3.8091555				
645	3.8095597	3.8096270	3.8096944	3.8097617	3.8098290				
646	3.8102325	3.8102997	3.8103670	3.8104342	3.8105013				
647	3.8109043	3.8109714	3.8110385	3.8111056	3.8111727				
648	3:8115750	3.8116420	3.8117090	3.8117760	3.8118430				
649	3.8122447	3.8123116	3.8123785	3.8124454	3.8125123				
650	3,8129134	3.8129802	3.8130470	3.8131138	3.8131805				
651	3.8135810	3.8136477	3.8137144	3.8137811	3.8138478				
852	3.8142476	3.8143142	3:8143808	3.8144474	3.8145140				
653	3.8149132	3.8149794	The state of the s	3.8151127	3.8151791				
654	3.8155777	3.8156441	3.8150462	3.8157769	3.8158433				
655	3.8162413	3.8163076	3.8163739	3.8164402	3.8165064				
656	3.8169038	3.8169700	3.8190362	3.8171024	3.8171686				
657	3.8175645	3.8176315	3.8176976	3.8177636	3.8178297				
658 :	3.8182259	3.8182919	3.8183579	3.8184239	3 81 84898				
659	3.8188854	3.8189513	3.8190172	3.8190831	3.8191489				
660	3.8195439	3.8196097	3.8196755	3.8197413	3.8198071				
661	3.8202015	3.8202672	3.8203328	3 8203985	3.8204642				
662	3.8208580	3.8209236	3.8209892	3.8210548	3.3211203				
663		3.8215790	3.8216445	3.8217100	3.8217755				
-		The second secon	A CONTRACTOR OF THE PARTY OF TH	Contract of the last of the la	Name of the last o				
664		3.8222335	3.8222989	3.8223643	3.8224296				
666	3.8228216	3.8228869	3.8229522	3.8230175	3.8230828				
	3.8234742	3.8235394	3.8236046	3.8236698	3.8237350				
667	3,8241258	3.8241909	3.8242560	3.8243211	3.8243862				
668	3.8247765	3.8248415	3.8249064	3.8249715	3.8250364				
669	3.8254261	3.8254910		3.8256208	3.8256857				
670		3.8266396		3-8252692	3.8263340				
671		3.8267872	3.8268519	3,8269166	3.8269813				
672	3.8273693	3.8274339	3.8274985	3.8275631	3.8276277				
693	3,8280151	3.8280796		3.8282086	3.8282731				
674	3.8286599	3.8287243	3.8287887	3.8288532	3.8289176				

1	ns from	-from	1 to 10000.	A second contract of the second	
Num.	3	6	7	8	9
630	3 7996851	3.7997540	3 7998228	3.7998917	3.7999605
631	3 8003734	3.8004421	3.8005109	3.8005796	3.8006484
632	3.8010605	3.801 1292-	3.8011978	3.8012665	3.8013351
633.	3.8017466	3.8018152	3.8018837	3.8019522	3.8020208
634	3.8024316	3.8025001	3.8025685	3.8026369	3.8027053
635	3.8031156	3.8031839	3.8032522	3.8033205	3.8033888
636	3.8037984	3.8038666	3.8039348	3.8040031	3.8040712
637	3.8044802	3.8045483	3.8046164	3.8046845	3.8047526
638	3.8051609	3.8052289	3.8052969	3 8053649	3.8054329
639	3.8058405	3.8059085	3.8059763	3.8050442	3.8061121
640	3.8065191	3,8065869	3.8066547	3.8067225	3.8067903
641	3.8071967	3.80726-3	3.8073320	3.8073997	3.8074674
642	3.8078732	3.8079407	3 8080083	3.8080759	3.8081434
643	3.8085485	3.8086160	3.8086835	3.8087510.	3.8088184
644	3.8092229	3.8092903	3.8093577	3.8094250	3.8094924
645	3.8098962	3.8099635	3:8100308	3.8100983	3.8101653
646	3.8105685	3.8106357	3.8107029	3.8107700	3.8108371
647	3.8112398	3.8113068	3.8113739	3:8114409	3.8115080
648	3.8119100	3.8119769	3.8120439	3.8121108	3.8121778
649	3.8125792	3.8126460	3.8127129	3:8127797	3.8128465
650	3.8132473	3.8133141	3.8133808	3.8134475	3.8135143
651	3.8139144	3.8139811	3.8140477	3.8141144	3.8141810
652	3.8145805	3.8146471	3.8147136	3.8147801	3.8148467
653	3.8152456	3.8153120	3.8153785	3.8154449	3.8155113
654	3.8159096	3.8159760	3.8160423	3.8161087	3.8161750
655	3.8165727	3.8166389	3.8167052	3.8167714	3.8168376
656	3.8172347	3.8173009	3.8173670	3.8174331	3.8174993
657	3.8178958	3.8179618	3.8180278	3.8180939	3.8181599
658	3.8185558	3.818.217	3.8186877	3.8187536	3:8188195
659	3.8192148	3.8192806	3.8193465	3.8194123	3.8194781
660	3.8198728	3 8199386	3.8200043	3.8200700	3.8201358
661	3.8205298	3.8205955	3.8206611	3.8207268	3.8207924
662	3.8211859	3.8212514	3.8213170	3.8213825	3.8214480
663	3.8218409	-	-	3.8220372	3.8221027
664	3.8224950	3.8225603	3.8226257	3.8226910	3.8227563
665	3.8231481	3.8232133	3.8232786	3.8233438	3.8234090
666	3.8238002	3.8238653	3.8239305	3.8239956	3.8240607
667	3.8244513	3.8245163	3.8245814	3.8246464	3.8247114
668	3.8251017	3.8251664	3.8252313	3.8252936	3.8253612
669	3.8257506	3.8258154	3.8258803	3.8259451	3.8260100
670	3.8263988	3.8271107	3.8265283	3.8265931	3.8266578
671	3.8276923	3.8277569	3.8271753	3.8171400	3.8273046
672	3.8283376	3.8284021	3.8278214	3.8278860	3,8279505
673	3.8289820	3.8290463	3.8284655	3.8285310	3.3285955
674	1.3.0209020	1 3.0290403	3.8291107	3.8291751	3.8292394

A TABLE of Logarith	m	arith	Loga	1	0	E	L	B	A	T	A
---------------------	---	-------	------	---	---	---	---	---	---	---	---

The state of

Num.	0	J 1	2	3	4
675	3.8293038	3.8293681	3.8294324	3.8294967	3.8295011
676	3.8299467	3:8300109	3.8300752	3.8301394	3.8302036
677	3.8305887	3.8306528	3.8307169	3.8307811	3.8308452
678	3.8312297	3.8312937	3.8313578	3.8314218	3.8314858
679	3.8318698	3.8319337	3.8319977	3.8320616	3.8321255
680	3.8325089	3.8325728	3.8326366	3.8327005	3.8327643
681	3.8331471	3.8332109	3.8332746	3.8333384	3.8334021
682	3.8337844	3.8338480	3.8339117	3.8339754	3.8340390
683	3.8344207	3.8344843	3.8345479	3.8346114	3.8346750
684	3.8350561	3.8351196	3.8351831	3.8352465	3.8353100
685	3.8356906	3.8357540	3.8358174	3.8358807	3.8359441
686	3.8363241	3.8363874	3.8364507	3.8365140	3.8365773
687	3.8369567	3.8370199	3.8370832	3.8371463	3.8372095
688	3.8375884	3.8376516	3.8377147	3.8377778	3.8378409
689	3.8382192	3.8382822	3.8383453	3.8384083	3.8384713
690	3.8388491	3.8389120	3.8389750	3.8390379	3.8391008
691	3.8394780	3.8395709	3.8396037	3.8396666	3.8397294
692	3.8401061	3.8401688	3.8402316	3.8402943	3.8403571
693	3.8407332	3.8407959	3.8408586	3.8409212	3.8409838
694	3.8413595	3.8414220	3.8414846	3.8415472	3.8416097
C 4076 BEST C 10 A	3.8419848	3.8420473	3.8421098	3.8421722	3.8422347
695	A DESCRIPTION OF STREET CALLEY ON	3.8426716	3.8427340		3.8428588
696	3.8426092			3.8427964	3.8434819
697	3.8432328	3.8432951	3.8433574	3.8434197	
698	3.8438554	3.8439176	3.8439798	3.8440420	3.8441042
699	3.8444772	3.8445393	3 8446014	3.8446635	3.8447256
700	3.8450980	3.8451661	3.8452221	3.8452841	3.8453461
701	3.8457180	3.8457800	3.8458419	3.8459038	3.8459658
702	3.8463371	3.8463990	3.8464608	3.8465227	3.8465845
703	3.8469553	3.8470171	3.8470789	3.8471406	3.8472024
704	3.8475727	3.8476343	3.8476966	3.8477577	3.8478193
705	3.8481891	3.8482507	3.8483123	3.8483739	3.8484355
706	3.8488047	3.8488662	3.8489277	3.8489892	3.8490507
707	3.8494194	3.8494808	3.8495423	3.8496037	3.8496651
708	3.8500333	3.8500946	3.8501559	3.8502172	3.8502786
709	3.8506462	3.8507075	3.8507687	3.8508300	3.8508912
710	3.8512583	3.8513195	3.8513807	3.8514418	3.8515030
711	3.8518696			3.8520528	3.8521139
712	3.8524800	3.8525410	3.8526020		3.8527239
713	3.8530895	3:8531504	3.8532113	3.8532722	3.8533331
714	3.8536982		3.8538198	3.8538806	3.8539414
715	3:8543060	3.8543668		3.8544882	3.8545489
716	3.8549130	3.8549737	3.8550343	3.8550949	3.8551556
717	3.8555192	3.8555797		3.8557008	3.8557614
718	3.8561244			3.8563059	3.856366
719	3.8567289		3.8568497		3.856970

Num.		6	A.C.	8	0
675	3.8296254	3.8296896	3.8297539	3.8298182	3.8298824
676	3.8302678	3.8303320	3.8303962	3.8304603	3.8305245
677	3.8309093	3.8309734	3.8310375	3.8311016	3.8311656
678	3.8315499	3.8316139	3.8316778	3.8317418	3.8318058
679	3.8321895	3.8322534	3.8323173	3.8323812	3.8324450
680	3.8328281	3-8328919	3.8329558	3.8330195	3.8330833
681	3.8334659	3.8335296	3.8335933	3.8336570	3.8337207
682	3.8341027	3.8341663	3.8342299	3.8342935	3.8343571
683	3.8347385	3.8348021	3.8348656	3.8349291	3.8349926
684	3.8353753	3.8354369	3.8355003	3.8355638	3.8356272
685	3.8360075	3.8360708	3.8361341	3.8361975	3.8362608
686	3.8366405	3.8367038	3.8367670	3.8368303	3.8368935
687	3.8372727	3.8373359	3.8373990	3.8374622	3.8375253
688	3.8379039	3.8379670	3.8380301	3.8380931	3.8381562
689	3.8385343	3.8385973	3.8386602	3.8387232	3.8387861
690	3.8391637	3.8392266	3.8392895	3.8393523	3.8394152
691	3.8397922	3.8398550	3.8399178	3.8399806	3.8400433
692	3.8404198	3.8404825	3.8405452	3.8406079	3.8406706
693	3.8410465	3.8411091	3.8411717	3.8412345	3.8412969
694	3.8416722	3.8417348	3.8417973	3.8418598	3.8419223
695	3.8422971	3.8423596	3.8424220	3.8424844	3.8425468
696	3.8429211	3.8429835	3.8430458	3.8431081	3.8431705
697	3.8435442	3.8436065.	3.8436687	3.8437310	3.8437932
698	3.8441664	3.8442286	3.8442907	3.8443529	3.8444150
699	3.8447877	3.8448498	3.8449119	3.8449739	3.8450360
700	3.8454081	3.8454701	. 3.8455321	3.8455941	3.8456561
701	3.8460277	3.8460896	3.8461515	3.8462134	3.8462752
7.02	3.8466463	3.8467081	3.8467700	3.8468318	3.8468935
703	3.8472641	3.8473258	3.8473876	3.8474493	3.8475110
704	3.8478810	3.8479426	3.8480043	3.8480659	3.8481275
705	3.8484970	3.8485586	3.8486201	3.8486817	3.8487432
706	3.8491122	3.8491736	3.8492351	3.8492956	3.8493580
707	3.8497264	3.8497878		3.8499106	3.8499719
-	3.8503399	3.8504011	3.8504624	3.8505237	
709	3.8509524	3.8510136	3.8510748	3.8511360	
710	3.8515641	3.8516252	3.8516863	3.8517474	3.8518085
711	3.8521749	3.8522359	3.8522970		3.8524190
712	3.8527849	3.8528458	3.8529068	3.8529677	
713	3.8533940	3.8534548	3.8535157		
714	3.8546096	3.8546703	3.8541238		
716	3.8552162	3.8552768	3.8553374		
717	3.8558219	3.8558824	3.8559429		
718	3.8564268	3.8564872	3.8565476	the second second second second second	
719	3.8570308	3.8570912		THE RESIDENCE TO SERVICE	

A TABLE of Logarithms

100	0	T Table	2	3	4
920	3.8573325	3.8573928	3.8574531	3.8575134	3.8575737
721	3.8579353	3.8579955	3.8580557	3.8581159	3.8581761
722	3.8585372	3.8585973	3.8586575	3.8587176	3.8587777
723	3.8591383	3.8591984	3.8592584	3.8593185	3.8593785
724	3.8597386	3.8597985	3.8598585	3.8599185	3.8599784
725	3.8603380	3.8603979	3.8504578	3.8605177	3.8605776
726	3.8609366	3.8609964	3.8610562	3.8611160	3.8611758
727	3.8615344	3.8615941	3.8616539	3.8617136	3.8617733
728	3.8621314	3.8621910	3.8622507	3.8623103	3.8623699
729	3.8627275	3.8627871	3.8628467	3.8629062	3.8629658
730	3.8633229	3.8633823	3.8634418	3.8635013	3.8635608
731	3.8639174	3.8639768	3.8640362	3.8640956	3.8641550
732	3.8645111	3.8645704	3.8646297	3.8646890	3.8647483
733	3.8651040	3.8651632	3.8652225	3.8652817	3.8653409
734	3.8656961	3.8657552	3.8658144	3.8658735	3.8659327
735	3.8662873	3.8663464	3.8664055	3.8664646	3.8665236
736	3.8668778	3.8669368	3.8669958	3.8670548	3.8671138
737	3.8674675	3.8675264	3.8675853	3.8676442	3.8677031
738	3.8680564	3.8681152	3.8681749	3.8682329	3.8682917
739	3.8686444	3.8687032	3.8687620	3.8688207	3.8688794
740	3.8692317	3.8692904	3.8693491	3.8694077	3.8694664
741	3.8698182	3.8698768	3.8699345	3.8699940	3.8700526
742	3 8704039	3.8704624	3.8705209	3.8705795	3.8706380
743	3-8709888	3.8710473	3.8711057	3-8711641	3.8712226
744	3.8715729	3.8716313	3.8716897	3.8717480	3.8718064
745	3.8721563	3.8722146	3.8722728	3.8723311	3.8723894
746	3.8727388	3.8727970	3.8728552	3.8729134	3.8729716
747	3.8733206	3.8733788	3.8734369	3.8734950	3.8735531
748	3.8739016	3.8739597	3.8740177	3.8740757	3.8741338
749	3.8744818	3.8745398	3.8745978	3.8746557	3.8747137
750	3.8750613	3.8751192	3.8751773	3.8752349	3.8752928
751	3.8756399	3.8756974	3-8757556	3.8758134	3.8758712
752	3.8762178	3.8762756	3.8763333	3.8763911	3.8764488
753	3.8767950	3.8768526	3.8769103	3.8769680	3.8770256
754	3.8773713	3:8774289	3.8774865	3.8775441	3.8776017
755	3.8779469	3.8780045	3.8780620	3.8781195	3.8781770
756	3.8785281	3.8785792	3.8786367	3.8786941	3.8787515
757	3.8790959	3.8791532	3.8792106	3.8792680	3.8793253
758	3.8796692	3.8797265	3.8797838	3.8798411	3.8798983
759	3.8802418	3.8802990	3.8803562	3.8804134	3.8804706
760	3.8808136	3.8808707	3.8809279	3.8809850	3.8810421
761	3.8813847	3.8814417	3.8814988	3.8815558	3.8816129
762	3.8819550	3.8820120	3.8820689	3.8821259	3.8821829
763	3.8825245	3.8825815	3.8826384	3.8826953	3.8827522
764	3.8830934	3.8831502	3.8832070	3.8832639	3.8833207
765	3.8836614	3.8837182	3.8837750	3.8838317	3.8838885

神经验的		from	1 to 10000.		
Num.	5	6		8	9
720	3.8576340	3.8576943	3.8577545	3.8578148	3.8578750
721	3.8582363	3.8582965	3.8583567	3.8584169	3.8584770
722	3.8588379	3.8588980	3.8589581	3.8590181	3.8590782
723	3.8594385	3.8594986	3.8595586	3.8596186	3.8596786
724	3.8600384	3.8600983	3.8601583	3.8602182	3.8602781
725	3.8606374	3.8606973	*3.8607571	3.8608170	3.8608768
726	3.8612356	3.8512954	3.8613552	3.8614149	3.8614747
727	3.8618330	3.8618927	3.8619524	3.8620120	3.8620717.
728	3.8624296	3.8624892	3.8625488	3.8626084	3.8526679
729	3.8630253	3.8630848	3.8631443	3.8632039	3.8632664
6 24 4 6	3.8636202	3.8636797	3.8637391	3.8637985	3.8638580
730	3.8642143	3.8642737	3.8643331	3.8643924	3.8644517
731			The second secon	The second second	Commence Accommence C
732	3.8648076	3.8648669	3.8649262	3.8649857	3.8650447
733	3.8654001	3.8654593	3.8655185	3.8655777	3.8656369
734	3.8659918	3.8660509	3.8661100	3.8661691	3.8662282
735	3.8665827	3.8666417	3.8667008	3.8667598	3.8668188
736	3.8671728	3.8672317	3.8672907	3.8673496	3.8674086
737	3.8677620	3.8678209	3.8674798	3.8679387	3.8679975
738	3.8683505	3 8684093	3.8684681	3.8685269	3.8685857
739	3.8689382	3.8689969	3.8690556	3.8691143	3.8691730
740	3.8695251	3.8695837	3.8696423	3.8697010	3.8697596
741	3.8701112	3.8701697	3.8702283	3.8702868	3.8703454
742	3.8706965	3.8707549	3.8708134	3.8708719	3.8709394
743	3.8712810	3.8713394	3.8713978	3.8714562	3.8715146
744	3.8718647	3.8719230.	3.8719814	3.8720397	3.8720980
745	3.8724476	3.8725059	3.8725641	3.8726224	3.8726806
746	3.8730298	3.8730880	3.8731461	3.8732043	3.8732629
747	3.8736112	3.8736693	3.8737274	3.8737855	3.873843
748	3.8741918	3.8742498	3.8743078	3.8743658	3.874432
749	3.8747716	3.8748296	3.8748875	3.8749454	3.875003
750	3.8753507	3.8754086	3.8754064	3.8755243	3.875582
751	3.8759290	3.8759868	3.8760445	3.8761023	3.876160
752	3.8765065	3.8765642	3.8766219	3.8766796	3.876737
753	3.8770833	3.8771409	3.8771985		3.877313
7 (C) (1) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C	3.8776592	3.8777168	3.8777743	3.8778319	3.877889
754	The second second	The second second second second			THE RESIDENCE AND ADDRESS OF THE PARTY NAMED IN
755	3.8782345	3.8782919	3.8783494	3.8784069	3.878464
756	3.8788089	3.87.88663	3.8789237		3.879038
757	3.8793826	3.8794400	3.8794973	3.8795546	
758	3.8799556	3.8800128	3.8800701	3.8801273	3.880184
759	3.8805278	3.8805850	3.8806421	3.8806993	3.880796.
760	3.8810991	3.8811663	3.8812134	3.8812705	3.881327
761	3.8816699	3.8817269	3.8817840	3.8818410	3.881898
762	3.8822398	3.8822968	3.8823537	3.8824107	3.882467
763	3.8828090	3.8818659	3.8829228	3.3829797	3.883036
764	3.8833775	3.8834343	3.8834911	3.8835479	3.883604
765	3.8839452	3.8840019	3.8840586	3.8841154	3.884172

	7	DI		-6	T	
A	LA	DI	.E	01-	Loga	arithms

Num.	0	7	or-Logaritm	2	A
Section 1	Marie Andrews Committee of the Committee	- 00	- 99.00-1	2 99,2299	- 00
766	3.8842288	3.8842855	3.8843421	3.8843988	3.8844555
767	3.8847954	3.8848520	3.8849086	3.8849652	3.8850218
768	3.8853612	3.8854178	3.8854743	3.8855308	3.8855874
769	-3.8859263	3.8865471	3.8866035	3.8866599	3.8861522
770	3.8864907	3.8871107	3.8871670	3.8872233	3.8867163
771	3.8876173	3.8876736	3.8877298	3.8877860	3.8872796
772	3.8881795	3 8882357	3.8882918	3.8883480	3.8884042
773	3.8887410	3.8887971	3.8888532	3.8889093	3.8889653
775	3.8893017	3.8893577	3.8894138	3.8894698	3.8895258
776	3.3898617	3.8899177	3.8899736	3.8900296	3.8900855
The second second second	3.8904210	3.8904769	3.8905328	3.8905887	3.8906445
777				The second second	
778	3.8909796	3.8910354	3.8910912	3.8911470	3.8912028
779	3.8915375	3.8915932	3.8916489	3.8917047	3.8917604
780	3.8920946	3.8921503	3.8922059	3.8922616	3.8923173
781	3.8926510	3.8927065	3.8927622	3.8928178	3.8928734
782	3.8932068	3.8932623	3.8933178	3.8933733	3.893 1288
783	3.8937618	3.8938172	3.8938727	3.8939281	3.8939836
784	3.8943161	3-8943715	3.8944268	3.8944822	3.8945376
785	3.8948697	3.8949250	3.8949803	3.8950356	3.8950909
786	3.8954225	3.8954778	3.8955330	3.8955883	3.8956435
787	3-8959747	3.8960299	3.8960851	3.8961403	3.8961954
788	3.898 5262	3.8965813	3.8966364	3.8966915	3.8967466
789	3-8970770	3.8971320	3.8971871	3.8972421	3.8972971
790	3.8976271	3.8976821	3.8977370	3.8977920	3.8978469
791	3.8981765	3.8982314	3.8982863	3.8983412	3.8983960
792	3.8987252	3.8987800	3.8988348	3.8988897	3.8989445
793	3.8992732	3.8993279	3.8993827	3.8994375	3.8994922
794	3.8998205	3.8998752	3.8999299	3.8999846	3.9000392
795	3.9003671	3.9004218	3.9004764	3.9005310	3.9005856
796	3.9009131	3.9009676	3.9010222	3.9010767	3.9011313
797	3.9014583	3.9025128	3.9015673	3.9016218	3.9016762
798	3.9020029	3.9020573	3.9021117	3.9021661	3.9022205
799	3.9025468	3.9026011	3.9026555	3.9027098	3.9027641
800	3.9030900	3.9031443	3.9031985	3.9032528	3.9033071
108	3.9036325	3.9036867	3.9037409	3.9037951	3.9038493
802	3.9041744	3.9042285	3.9042827	3.9043368	3.9043909
803	3.9047155	3.9047696	THE RESERVE MARKET BUT ALL POLICE TO THE	3.9048778	
804	3.9052560	3.9053101	3.9053641	3.9054181	3.9054721
805	3.9057960	3.9058498		3-9059577	
806	3.9063351	3.9063889	3.9064428	3.9064967	3.9065505
807	3.9068735	3.9069273		3.9070350	3.9070887
808	3.9074114	3.9074651	3.9075188	3.9075726	3.9076263
809	3.9079485	MAR PARTIES AND		3.9081095	3.9081632
810	3.9084850	3.9085386	3.9085922	3.9086458	3.9086994
1811	3.9090209	13.9090744	3.9091297	3.9091815	3.9092350

		from 1	to-1000c.		
Num.	5	6	7	8	9
766	3.8845122	3.8845688	3.8846255	3.8846821	3.8847387
767	3.8850785	378851350	3.8851915	3.8852481	3.8853047
768	3.8856439	3.8857004	3.8857569	3.8858134	3.8858699
769	3.8862086	3.8861651	3.8863215	3.8863779	3.8864343
770	3.8367726	3.8868290	3.8868854	3.8869417	3.8869980
771	3.8873359	3.8873922	3.8874485	3.8875048	3:8875610
772	3.8878985	3.8879547	3.8880109	3.88806-1	3.8881233
773	3.8884603	3.8885165	3.8885726	3.8886287	3.8886848
774	3.8890214	3.8890775	3.8891336	3.8891896	3.8892457
2775	3.8895818	3.8896378	3.8896938	3.8897498	3 8898058
776	*3.8901415	3.8901974	3.8902533	3.8903092	3.8903651
777	3.8907004	3.8907562	3.8908121	3.8908679	3.8909238
778	3.8912586	3.8913144	3.8913702	3.8914259	3.8914817
779	3.8918162	3.8918718	3.8919275	3.8919832	3.8920389
780	3.8923729	3.8924285	3.8924842	3.8925398	3.8925954
781	3.8929290	3.8929846	3.8930401	3.8930957	3.8931512
782	3.8934843	3.8935398	3.8935953	3.8936508	3.8937063
783	3.8940390	3.8940944	3.8941498	3.8942053	3.8942607
784	3.8945929	3.8946483	3.8947037	3.8947590	3.8948143
785	3.8951462	3.8952015	3.8952568	3.8953120	3.8953673
786	3.8956987	3.8957539	3.8958091	3.8958643	3.8959195
787	3.8962506	3.8963057	3.8963608	3.8964160	3.8964711
788	3.8968017	3.8968568	3.8969118	3.8969669	3.8970220
789	3.8973521	3.8974071	3.8974721	3.8975171	3.8975721
	The second second	-	and the second		The second secon
790	3.8979019	3.8979568	3.8980117	3.898667	3.8981210
791	3-8984509	3.8985058	3.8985606		
792	3.8989993	3.8990541	3.8991089	3.8991636	3.8992184
793	3.8995469	3.8996017	3.8996564	3.8997111	3.8997658
794	3.9000939	3.9001486	3.9002032	3.9002579	3.9003125
795	3.9006402	3.9006948	3.9007464	3.9008039	3.9008585
796	3.9011858	3.9012503	3.9012948	3.9018940	3.9014038
797	3 9017307	3.9023293	3.9023837	3.9024381	
798	3.9022749	3.9028728	3.9029271		3.9024924
799	3.9028185	3.9034156	3.9034698	3.9029814	
	3.9033613	A STATE OF THE PARTY OF THE PAR	THE RESIDENCE OF THE PARTY OF T	CO DESCRIPTION OF THE PROPERTY AND ADDRESS OF THE PERSON O	C Library Company of the Company of
801	3-9039035	3.9039577	3.9040119		
802	3.9044450	3.9044992	3.9045533		NAME OF TAXABLE PROPERTY AND ADDRESS OF THE PARTY OF THE
803	3.9049859	3.9020399	3.9050940		
804	3.9055261	3.9055800	3.905.6340		
805	3.9060656	3.906 1195	3.9061734		3.9062812
806	3.9066044	3.9066582	3.9067121	3.9067659	3.9068197
807	3.9071425	3.9071963	3.9072501		
808	3.9076800	3.9077337	3.9077874		3.9078948
809	3.9082169	3.9082705	3.9083241	3.9083778	
810	3.9087530	3,9088066	3.9088602		
118	3.9092805	3.9093420	3.9093955	13.9094490	3.9095025

A STREET AND LABOUR.	BANK BURNEY	No. of Contrast	CERT	STOR THE		
SIGN, NOVEMBER 24	A 13	10h 1985		0.122.00	Logarithms	
	A 15	200 GO	8100	OL	- Loggrithme	
BO T THE REAL PROPERTY.	12 20	-			TOEST ICHILIS	

Num.	0 1	AIABL	E or Logarit	MARKET THE RESIDENCE OF THE PARTY OF THE PAR	
1 1 1 1 1 1	-		-	3	_ 4
812	3.9095560	3.9096095	3.9096630	3.9097165	3.9097699
813	3.9100905	3.9101440	3.9101974	3.9102508	3.9103042
814	3.9.106244	3.9106778	3.91073 LI	3.9107844	3-9108378
815	3.9111576	3 9112109	3,5112642	3.9113174	3.9113707
816	3.9116902	3.9117434	3.9117966	3.9118498	3.9119030
817	3.9122220	3.9122752	3.9123234	3.9123815	3.9124346
818	3.9127533	3.9128064	3.9128595	3.9129126	3.9129656
919	3.9132839	3-9133369	3.9133899	3.9134430	3.9134960
820	3.9138139	3 9138668	3,9139198	3.9139727	3.9140257
821	3.9143432	. 3.9143961	3.9144489	3.9145018	3.9145547
822	3.9148718	3.9149246	3 9149775	3.9150303	3.9150831
823	3.9153998	3.9154526	3.9155054	3.9155581	3.9156109
824	3.9159272	3.9159799	3.9160326	3.9160853	3.9161380
825	3.9164539	3.9165066	3.9165592	3.9166118	3.9156645
826	3.9169800	3.9170326	3.9170852	3.9171378	3.9171903
827	3.9175055	3.9175580-	3.9176105	3.9176630	3.9177155
828	3.9180303	3.9180828	3.9181253	3.9181877	3.9182401
829	3.9185545	3.9186069	3.9186593	3.9187117	3.9187640
830	3.9190781	3.9191304	3.9191827	3.9192350	3.9192873
831	3.9196010	3.9196533	3.9197055	3.9197578	3.9198100
832	3.9201233	3.9201755	3.9202277	3.9202799	3.9203321
833	3.9206450	3.9206971	3.9207493	3.9208014	3.9208535
834	3.9211661	3.9212181	3.9212702	3.9213222	3.9213743
835	3.9216865	3.9217385	3.9217905	3.9218425	3-9218945
836	3.9222063	3.9222582			
837	3.9227255	3.9227773	3.9223102	3.9223621	3.9224140
838	3.9232440	3.9232958		3.9228811	3.9229330
839	3.9237620	3.9238137	3.9233477	3.9233995	3.9234513
840	3.9242793	3.9243310	3.9243827	3.9239172	3.9239690
841	3.9247960	3.9248476	THE RESERVE OF THE PARTY OF THE	3.9244344	3.9244860
842	3.9253121	3.9253637	3.9248993	3.9249509	3 9250025
843	3.9258276	3.9258791	3.9254152	3.9254668	3.9255184
844	3.9263424	3.9263939	3.9264453	3.9259821	3.9260336
845	3.9268567	3.9269081	3.9269595		3.9265482
846	3.9273704	3.9274217	3.9274730	3.9270109	3.9270622
847	3.9278834	3.9279347	3.9279859	3.9275243	3.9275757
848	-	il Illianos con establishment de la			3.9280885
849	3.9283959	3.9284471	3.9284983	3.9285495	3.9286007
850	3.9289077	3.9289588	3.9290100	3.9290611	3.9291123
851	3-9294189	3.9294700	3.9295211	3.9295722	3-9296233
852	3.9299296	3.9299806	3.9300316	3.9300826	3.9301336
853	3.9304396	3.9304906	3.9305445	3.9305925	3.9306434
854	3.9309490	3.9309999	3 9310508	3,9311017	3.9311526
855	3.9314579	3.9315087	3.9315596	3.9316104	3.9316612
856	3-9319661	3.9320169	3.9320677	3.9321185	3.9321692
857	3.9324738	3.9325245	3.9325752	3.9326259	3.9326767
A TRANSPORTER OF THE PARTY	3.9329808	349330315	3.9330822	3.9331328	3.9331835
858	3.9334873	3.9331379	3.9335885	3.9336391	3.9336897

		from 1	ED 10000.		
Num.	3	6	7	8	9
812	3.9098234	39098768	3.9099303	3.9099837	3.9100371
813	3.9103576	3.9104109	3.9104643	3.9105177	3.9105710
814	3.9108911	3.9109444	3.9109977	3.9110510	3.9111043
815.	3.9114240	3.9114772	3.9115305	3.9115837	3.9116369
816	3.9119563	3.9120094	3.9120626	3.9121157	3.9121689
817	3.9124878	3.9125409	3.9125940	3.9126471	3.9127002
818	3.9130187	3.9130717	3.9131248	3.9131778	3.9132309
819	3.9135490	3.9136019	3.9136549	3.9137079	3.9137609
820	3.9140786	3.9141315	3.9141844	3.9142373	3.9142903
821	3.9146076	3.9146604	3.9147133	3.9147661	3.9148190
822	3.9151359	3.9151887	3.9152415.	3.9152943	3.9153471
823	3.9156636	3.9157163	3.9157691	3.9158218	3.9158745
824	3.9161907	3.9162433	3.9162960	3.9163487	3.9164013
825	3.9167171	3.9167697	3.9168223	3.9168749	3.9169275
826	3.9172429	3.9172954	3.9173479	3.9174005	3.9174530
827	3.9177680	3.9178205	3.9178730	3.9179254	3.9179779
828	3.9182925	3.9183449	3.9183973	3.9184497	3.9185021
829	3 9188164	3.9188687	3.9189211	3.9189734	3.9190258
830	3.9193396	3.9193919	3.9194442	3.9194965	3.9195488
831	3.9198623	3.9199145	3.9199667	3.9200189	3.9200711
832	3.9203842	3.9204364	3.9204886	3.9205407	3.9205929
833	3.9209056	3.9209577	3.9210098	3.9210619	3.9211140
834	3.9214263	3.9214784	3.9215304	3.9215824	3.9216345
835	3.9219465	3.9219984	3.9220504	3.9221024	3.9221543
836	3.9224659	3.9225179	3.9225698	3.9226217	3.9226736
837	3.9229848	3.9230367	3.9230885	3.9231404	3.9231922
838	3.9235031	3.9235549	3.9236066	3.9236584	3.9237102
839	3.9240208	3.9240724	3.9241242	3.9241759	3.9241276
840	3.9245377	3-9245894	3.9246410	3.9246927	3-9247444
841	3.9250541	3.9251057	3.9251573	3.9252089	3.9252605
842	3.9255699	3.9256215	3.9256730	3-9257245	3.9256761
843	3.9260851	3.9261366	3.9261880	3.9262395	3.9262910
845	3.9265997	3.9266511	3.9267025	3.9267539	3.9268053
846	3.9271136	3.9271650	3.9272163	3.9272677	3.9273190
847	3.9276170	3.9276783	3.9277296	3.9277808	3.9283446
848	Contract of the last of the la	3.9281909	3.9282422		
849	3.9286518	3.9287030	3.9287542	3.9288054	3.9288565
850	3.9291634	3.9292145	3.9292656	3.9293167	3.9293678
851	3.9296743	3.9297254	3.9297764	3.9298275	3.9298785
852	3.9301847	3.9302357	3.9302866	3.9303376	3.9303886
853	3.9312035	3.9307453	3.9307963	3.9308472	3.9308981
854	3.9317121	3.9312544	3.9313053	3.9313561	3.9314070
855	3.9322200	3.9317629	3.9318137	3.9318645	3.9319153
856	3.9327274	3.9327781	3.9323215	3.9328795	3.9329301
857	3.9332341	3.9332848	3.9333354	3.9333860	3.9334367
858	3.9337403	3.9337909	3.9338415	3.9337920	3.9339436
100000000000000000000000000000000000000	A STATE OF THE PARTY OF THE PAR	37331709	1 3.733041)	3.733.1720	Marie Selection of the

	e A	TABLE	of Logari	bms	
Num.	• 0	7	and a second	3	4
859	3.9339932	3.9340437	3.9340943	3.9341448	3.9341953
860	3.9344984	3.9345489	3.9345994	3.9346499	3.9347003
861	3.9350032	3.9350536	3.9351040	3.9351544	3.9352049
862	3.9355073	3.9355576	3.9356080	3.9356584	3.9357087
863	3.9360108	3.9360611	3.9361114	3.9361617	3.9362120
864	3.9365137	3.9365640	3.9366143	3.9366645	3.9367148
865	3.9370161	3.9370663	3.5371165	3.9371667	3.9372169
866	3.9375179	3.9375680	3.9376182	3.9376683	3.9377184
867	3.9380191	3.9380692	3.9381193	3.9381693	3.9382194
868	3.9385197	3.9385698	3.9386198	3.9386698	3.9387198
869	3.9390198	3.9390697	3.9391197	3.9391697	3.9392196
870	3.9395193	3.9395692	3.9396191	3.9396690	3.9397189
871	3.9400182	3.9400580	3.9401179	3.9401677	3.9402176
872	3.9405165	3.9405663	3.9406161	3.9406659	3.9407157
873	3.9410142	3.9410640	3.9411137	3.9411635	3.9412132
874	3.9415114	3.9415611	3.9416108	3.9416605	3.9417101
875	3.9420081	3.9420577	3.9421073	3.9421569	3.9422065
876	3.9425041	3.9425537	3.9426032	3.9426528	3.9427024
877	3.9429996	3 9430491	3.9430986	3.9431481	3.9431976
878	3.9434945	3.9435449	3-9435934	3.9436429	3.9436923
879	3.9439889	3.9440383	3.9440877	3.9441371	3.9441865
880	3.9444827	3.9445320	3.9445814	3.9446307	3.9446800
881	3.9449759	3.9450252	3.9450745	3.9451238	3.9451730
882	3.9454686	3.9455178	3.9455671	3.9456163	3.9456655
883	3.9459607	3.9460099	3:9460591	3.9461082	3.9461574
884	3.9464523	3.9465014	3.9465505	The state of the s	3.9466487
885	3.9469433	3.9469923	3.9470414		3-9471395
886	3.9474337	3-9474827	3.9475317	THE RESERVE AND ADDRESS OF THE PARTY OF THE	3.9476297
887	3.9479236	3.9479726	3.9480215		3.9481194
888	3.9484130	3.9484619	3.9485108	3.9485597	3.9486085
889	3.9489018	3.9489509		3.9490483	3.9490971
890				3.9495364	3.9495851
891	3.9498777			3.9500239	3.9500726
892	3.9503649	3.9504135			3.9505596
893	3.9508515	3.9509001	3.950948	3.9509973	
894	3.9513375	3.9513861	3.9514347	3.9514832	3.9515318
895	THE RESIDENCE OF THE PARTY OF T	3.9518716	3.951920	3.9519686	3.9520171
896				ACCUPATION OF THE PARTY OF THE	Committee of the commit
于897		STATE AND SECTION OF THE PARTY OF THE SECTION OF			
898			CHARLE TO THE STATE OF THE STAT		
899		STATE OF THE PROPERTY OF			
100					
90					
DOUBLING DOLL ALL A				THE RESERVE THE PROPERTY OF THE PARTY OF THE	
90	3.955687	3.055735			3.9558801
1 00.	3.956486	3.956216			3.9563605
1 90	3.9566486	3.9566966			

		from 1	10 10000.		
Num.	5	6-	7	8	9
859	3.9342459	3.9342964	3.9343169	3.9343974	3-9344479
860	3.9347509	3.9348013	3.9348518	3.9349022	3.9349527
198	3.9352553	3.9353057	3.9353561	3.9354065	3.9354569
862	3.9357591	3.9358095	3.9358598	3.9359101	3.9359605
863	3.9362623	3.936312	3.9363629	3.9364132	3.9364635
864	3.9367650	3.9368152	3.9368655	3.9369157	3.9369659
865	3.9372671	3.9373172	3.9373674	3.9374176	3.9374677
866	3.9377686	3.9378187	3.9378688	3.9379189	3.9379690
867	3.9382695	3.9383195	3.9383696	3.4384196	3.9384697
868	3.9337698	3.9388198	3.9388698	3.9389198	3.9389698
869	3.9392696	3.9393195	3.9393695	3.9394194	3.9394693
870	3.9397688	3-9398187	3.9398685	3.9399184	3.9399683
	3.9402674	3.9403172	3.9403670	3.9404169	3.9404667
871	3.9407654	3.9408152	3.9408650	3.9409147	3.9409645
872	3.9412629	3.9413126	3.9413623	3.9414120	3.9414617
873	3.9417598	3.9418095	3.9418591	3.9419088	3.9419584
874	3.9422561	3.9423058	3.9423553	3.9424049	3.9424545
876	3 9427519	3.9428015	3.9429510	3.9429005	3.9429501
877	3.9432471	3.9432966	3.9433461	3.9433956	3.9434450
878	3.9437418	3.9437912	3.9438406	3.9438900	3.9439395
879	3.9442358	3.9442852	3.9443346	3.9443840	3.9444333
880	3.9447294	3.9447787	3.9448280	3.9448773	3.9449266
881	3.9452223	3.9452716	3.9453208	3.9453701	3.9454193
882	3.9457147	3.9457639	3,9458131	3.9458623	3.9459115
883	3.9462066	3.9462557	3.9463048	3.9463540	3.9464031
The state of the s	3.9466978	3.9467469	3.9467960	3.9468451	3.9468942
884	3.9471886	3.9472376	3.9472866	3-9473357	3.9473847
886	3.9476787	3.9477277	3.9477767	3.9478257	3.9478747
387	3.9481684	3.9482173	3.9482662	3.9483151	3.2483641
888	3.9486574	3.9487063	3.9487552	3.9488040	3.9488529
889	3.9491460	3.9491948	3.9492436	3-9492924	3.9493412
890	3.9496339	3.9495827	3.9492314	3.9497802	3.9498290
891	3.9501213	3.9501701	3.9502188	3.9502675	3.9503162
892	3.9506081	3.9506569	3.9507055	3.9507542	3.9508028
893	3.9510946	3.9511432	3.9511918	3.9512404	3.9512889
894	3.9515803	3.9516289	3.9516774	3.9517260	3.9517745
895	3.9520656	3.95'1141	3.9521626	3.9522111	3.9522593
896	3.9525503	3.9525987	3.9526472	3.9526956	3.9527440
897	3.9530345	3.9530828	3.9531312	3.9531796	3.9532280
898	3.9535181	3.9535664	3.9536147	3.9536631	3.9537114
899	3.9540012	3.9540494	3.9540977	3.9541460	3.9541943
900	3.9544837	3.9545319	3.9545802	3.9546284	3.9346766
901	3.9549657	3.9550139	3.9550621	3.9551102	3.9551584
902	3.9554472	3.9554953	3.9555434	3.9555915	3.9556397
903	3.9559282	3.9559762	3.9560243	3.9560723	3.9561204
904	3.9564086		3.9565045	3.9565526	3.9566006
905	3.9568885	3.9569364	3.9569844	3.9570323	3.95708031
100	THE RESIDENCE OF THE PARTY OF T	Name and Address of the Owner, which the	THE PARTY OF THE P		CONTRACTOR OF THE PARTY OF THE

F f

		TOTAL PROPERTY OF THE PROPERTY
SPACE AND ADDRESS OF THE REST	Company of the Compan	CARREST CONTRACTOR CON
ATABL	SECTION AND DESCRIPTION OF THE PERSON NAMED IN	OZATITOMS
and a state of the property of		TATE OF REDITED

Num.		T. 1.1.0.0.	s of Logarith	3	
		1	-	A STATE OF THE PARTY OF THE PAR	4
906	3.9571282	3.9571761	3.9572241	3.9572720	3.9573199
907	3.9576073	3.9576552	3.9577030	3.9577509	3.9577988
800	3.9580858	3.9581337		3.9587072	3.9582771
909	3.9585639	3.9586117	3.5586594	3.9591845	3.9587546
910	3.9590414	3.9590891	3.9591368		3.9592322
911	3.9595184	3.9595660	3.9596137	3.9596614	3.9597090
912	3.9599948	3.9600425	3.9600901		3.9601853
913.	3.9604708	3.9605183	3.9603659	3.9606135	3.9606610
914	3.9609462	3 9609937	3.9610412	3.9610887	3.9611361
915	3.9614241	3.9614686	3.9615160	3.9615635	3.9616109
916	3.9618955	3.9619429	3 9619903	3.9620377	3.9620851
917	3.9623693	3.9624167	3.9624640	3.9625114	3.9625587
918	3.9628427	3.9628900	3.9629373	3.9629846	3.9630319
919	3 9633155	3.9633628	3.9634100	3.9634573	3.9635045
920	3.9637878	3-9638350	3 9638822	3-9639294	3.9639766
921	3.9642596	3.9643068	3.9643539	3.9644011	3.9644482
922	3.9647309	3.9647780	3.9648251	3-9648722	3.9649193
923	3.9652017	3.9652488	3.9652958	3.9653428	3.9653899
924	3.9656720	3.9657190	3.9657660	3.9658130	3.9658599
925 .	3.9661417	3.9661887	3.9662356	3.9662826	3.9663295
926	3.9666110	3.9666579	3.9567048	3.9667517	3.9667935
927	3.9670797	3.9671266	3.9671734	3.9672203	3.9672971
928	3.9675480	3.9675948	3.9676416	3.9676883	3.9677351
929	3.9680157	3.9680625	3.9681092	3.9681559	3.9682027
930	3.9684829	3.9685296	3.9685763	3.9686230	3.9686697
931	3.9689497	3.9684963	3.9690430	3.9690896	3.9691362
932	3.9694159	3.9694625	3.9695091	3.9695557	3.9696023
933	3.9698816	3.9699282	3.6699747	3.9700213	3.9700678
934	3:9703469	3.9703934	3.9704399	3.9704863	3.9705328
935	3.9708116	3.9708581	3.9709045	3.9709509	3.9709974
936	3.9712758	3.9713222	3.9713686	3.9714150	3.9714614
937	3.9717396	3.9717859	3.9718323	3.9718786	3.9719249
938	3.9722028	3.9722491	3.9722954	3.9723417	3.9723880
939	3.9726656	3.9727118	3.9727581	3.9728043	3.9728506
940	3.9731278	3.9731741	3.9732202	3.9732664	3.9733126
941	3.9735896	3.9736357	3.9736819	3.9737281	3.9737742
_	Contract of the last of the la		The state of the s		1
942	3.9740509	3.9740970	3.9741431	3.9741892	3.974235
943	3.9745117	3.9745577	3.9746037	3.9746498	3.9746959
944	3.9749720	3.9750180	3.9750640	3.9751100	3.9751560
945	3.9754318	3.9754778	3.9755237	3.9755697	3.9756150
946	3.9758911	3.9759370	3-9759829	3.9760288	3.9760747
947	3.9763500	3.9763958	3.9764417	3.9764875	3.9765334
948	3.9768083	3.9768541	3.9768999	3.9769457	3.976991
949	3.9272662	3.9773120	3.9773577	3.9774035.	3.977449
1950	3.9776236	3.9777693	3.9778150	3.9778607	3.9779064
951	3.978 1005	1 3.9782262	1 3.9782718	3.9783175	3.9783631
952	1 3.9786469	3.9786826	3.9787282	3-9787738	3.9788194

...

		from	10 10000;		200
Num.	5	6	7	8	9
906	3.9573678	3-9574157	3-9574636	3.9575115	3-9575594
907	3.9578466	3.9578945	3.9579423	3.9579901	3.9580380
908	3.9583249	3.9583727	3.9584205	3.9584683	3.9585161
909	3.9588027	3.9588505	3-9588982	3.9589459	3.9589937
910	3.9592799	3.9593276	3.9593753	3.9594230	3.9594707
911	3.9597567	3.9598043	3.9598520	3.9598996	3-9599472
912	3.9602329	3.9602805	3.9603280	3.9603756	3.9604232
913	3.9607086	3.9607561	3.9608036	3.9608512	3.9608987
914	3.9611837	3.9612312	3.9612787	3.9613262	3.9613736
915	3.9616583	3.9617058	3.9617532	3.9518006	3.9618481
916	3.9621325	3.9621799	3.9622272	13.9622746	3.9623220
917	3.9626061	3.9626534	3.9627007	3.9627481	3.9627954
918	3.9630792	3.9631264	3.9631737	3.9632210	3.9632683
919	3.9635517	3.9635990	3.9636462	3.9636934	3.9637406
920	3.9640238	3.9640710	3.9541181	3.9641653	3.9642125
921	3.9644953	3.9645425	3.9645896	3.9646367	3.9646838
922	3.9649664	3.9650134	3.9650605	3.9651076	3.9651546
923	3.9654369	3.9654839	3.9655309	3.9655780	3.9656250
924	3.9659069	3.9659539	3.9660009	3.9660478	3.9660948
925	3.9663764	3.9664233	3.9664703	3.9665172	3.9665641
926	3.9668454	3.9568923	3.9669392	3.9669860	3.9670329
927	3.9673139	3.9673607	3.9674076	3.9674544	3.9675012
928	3.9677819	3.9678287	3.9678754	3.9679222	3.9679690
929	3.9682494	3.9682961	3.9683428	3.9683895	3.9684362
	3.9687164	3.9687630	3.9688097	3.9688564	3.9689030
930	3.9691829	3.9692295	3.9692761	3.9693227	3.9693693
931	3.9696488	3.9696954	3.9697420	3.9697885	3.9698351
932	3.9701143	3.9701608	3.9702074	3.9702539	3.9703004
	3.9705793	3.9706258	3.9706722	3.9707187	3.9707652
934	3.9710438	3.9710902	3.9711366	3.9711830	3.9712294
936	3.9715078	3.9715542	3.9716005	3-9716469	3.9716932
937	3.9719763	3.9720176	3.9720639	3.9721102	3.9721565
938	3.9724343	3.9724805	3.9725268	3.9725731	3.9726193
939	3.9728968	3.9729430		3.9730354	3.9730816
940	3.9733588	3.9734050	3.9734511	3.9734973	3.9735435
941	2.0738203	3.9738664	3.9739126	3.9739587	3.9740048
-	- 2			The state of the s	
942	3.9742814	3.9743274	3.9743735	3.9744196	3.9744656
943.	3.9747419	3.9747879	3.9748340	3.9748800	3.9749260
944	3.9752020	3.9752479	3.9752939	3.9753399	3.9753858
945	3.9756615	3.9757076	3.9757534	3-9757993	3.9758452
946	3.9761206	3.9761665	3.9762124	3.9762582	3.9763041
947	3.9765792	3.9766251	3.9766709	3.9767167	3.9767625
948	3.9770373	3.9770831	3.9771289	3.9771747	3.9772204
949	3.9774950	3.9775407	3.9775864	3.9776322	3.9776779
940	3.9779521	3.9779978	3.9780435	3.9780892	3.9781348
941	3.9784088	3.9784544	3.9785001	3.9785457	3.9785913
952	3.9788650	3.9789106	3.9789562	3.9790017	3.9790473

FII 2

		ATABL	E of Logari	thms	
ISHM.			2	. 3	4
953	3.9790929	3-9791385	3.9791840	3.9792296	3.9792751
954	3.9795484	3-9795939	3.9796394	3.9796849	3.9797304
955	3.9800034	3.9800488	3.9800943	3.9801398	3.9801852
956	3.9804579	3.9805033	3.9805487	3.9805942	3.9806396
957	3.9809119	3.9809573	3.9810027	3.9810481	3.9810934
958	3.9813655	3.9814108	3.9814562	3.9815015	3.9815468
959	3.9818186	3.9818639	3.5819092	3.9819544	3.9819997
960	3.9822712	3.9823165	3.9823917	3.9824069	3.9824522
961	3.9827234	3.9827686	3.9828138	3.9828589	3.9829041
962	3 9831751	3.9832202	3.9832654	3.9833105	3.9833556
963	3.9836263	3.9836714	3.9838165	3.9837616	3.9838066
964	3.9840770	3.9841221	3.9841671	3.9842122	3.9842572
965	3.9845273	3.9845723	3.9846173	3.9846623	3.9847073
966	3.9849771	3.9850221	3.9850670	3.9851220	3.9851569
967	3.9854265	3.9854714	3.9855163	3.9855612	3.9856061
963	3.9858754	3.9859202	3-9859651	3.9860099	3.9860548
969	3.9863238	3.9863686	3.9864134	3.9864582	3.9865030
970	3.9867717	3.9868165	3.9868613	3.9869060	3.9869508
971	3.9872192	3.9872640	3.9873087	3.9893534	3.9873981
972	3.9876663	3.9877109	3.9877556	3.9878003	3.9878449
973	3.9881128	3.9881575	3.9882021	3.9882467	3.9882913
974	3,9885590	3.9886035	3.9886481	3.9886927	3.9887373
1975	3.9890046	3.9890492	3.9890937	3.9891382	3.9891828
976	3.9894498	3.9894943	3.9895388	3.9895833	3.9896278
977	3.9898946	3.9899390	3.9899835	3.9900279	3.9900723
978	3.9903389	3.9903833	3.9904277	3.9904721	3.9905164
979	3.9907827	3.9908270	3.9908714	3.9909158	3.9909601
980	3.9912261	3.9912704	3.9913147	3.9913590	3.9914033
981	3.9916690	3.9917133	3.9917575	3.9918018	3.9917461
982	3.9921115	3.9921557	3.9921999	3.9922441	3.9922884
983	3.9925535	3.9925978	3.9926419	3.9926860	3.9927302
984	3.9939951	3.9930392	3.9930834	3.9931275	3.9931716
985	3.9934362	3.9934803	3.9935244	3.9935685	3.9936126
986	3.9938769	3.9939210	3.9939650	3.9940090	3-9940531
987	3.9943172	3.9943612	3.9944051	3.9944491	3.9944931
988	3.9947569	3.9948009	3.9948448	3.9948888	3.9949327
989	3.9951963	3.9952402	3.9952841	3.9953280	3.9953719
990	3.9956352	3.9956791	3.9957229	3.9957668	-3.9958106
991	3.9960737	3.9961175	3.9961613	3.9962051	3.9962489
992	3.9965117	3 9965554	3.9965992	3.9966430	3.9966868
993	3.9969492	3.9969930	3.9970367	3.9970804	3.9971242
994	3.9973864	3.9974301	3.9974738	3.9975!74	3.9975611
995	3.9978231	3.9978667	3.9979104	3.9979540	3.9979976
996	3.9982593	3.9983029	3.9983465	3.9983901	3.9984337
297	3.9986952	3.9987387	3.9987823	3.9988258	3 9988694
998	3.9991305	3.9991740	3.9992176	3.9992611	3.9993046
999	3.9995655	3.9996090	3.9996524	3.9996959	13.9997393

3.9994350

3 9998697

3.9999131

3.9099561

3.9998262

998

909

3.9993481

3.9997828

o Degrees.

M	Sine		Tang.		Secant.		
0	0,000000	1.0000000	0.0000000	Infinite.	10.0000000	Infinite.	60
1	6.4637261	9-9999999	6.4637251	13.5362739		13.5362739	
2	6.7647561	9.9999999	6.7647562	13.2352438	10.0000001	13:2352439	58
3	6.9408473	9.9999998		13.0591525		13.0591527	
		9-9999997		12.9342137		12.9342140	
5	7.1626960	9-9999995	7.1626964	12.8373036	10.000005	12.8373040	55
6	7.2418771	9-9999993	7.24:8778	12.7581222	10.0000007	12.7581229	54
		9.9990991	7-3088247	12.5911752	10.0000005	12.6911761	53
		9.999988		12.633 1831	10.0000012	12.6331843	52
9	7.4179681	9.9999985	7-4179696	12.5820304	10.0000015	12:5820319	51
10	7-4637255	9.9999982	7.4637273	12.5362727	10.0000018	12.5362745	50
11	7.5041181	9.9999978	7.5051203	12.4948797	10.0000022	12.4948819	49
		9.9999974	7.5425091	12 4570909	10.0000026	12:4570935	48
		9-9999969		12.4223285		12:4223316	
		9.9999964		12.3901434	10,0000036	12.3901470	40
15	7.6398160	9.9999959	7.6398201	12 3601799	10,0000041	12.3601840	45
16	7.6678444	9.9999953	7.6678492	12.3321508	10.0000047	12.3321555	77
		9-9999947		12.3058214		12.3058267	
		9.9999940		12.2809974		12.2810034	
		9.9999934		12.2575159		12.2575225	
		9-9999927		12.2352390		12.2352463	
-	-	9.9999919	7-78-0408	12.2140492	18,0000081	12.2240573	35
	7.8661458			12.1938453		12.1938342	38
		9.9999903		12.1745396	10.0000097		37
		9.9999894		12.1560556		12.1560662	
		9.9959885		12.1383262		12.1383377	3
20	7.8786062	9.9999876	7.8787077	12.1212923	10,0000124	12.1213047	34
		9.9999866		12-1049012		12.1049146	
		9.9999856	The state of the s	12.0891062		12.0891207	
1800	Maria Contract Contra	9.9999845	The second second	12.0738656		12.0738810	
		9.9999835	The second second	12.0591416	10.0000165	12.0991581	30
100		Sine		Tang.	355	Secant.	M

o Degrees.

M	Sine.		Tang.	120	Secant.	\$10.30 m	
	7.9408419	9.9999835	7.9408 484	12.0591416	10.0000165	12.0591581	30
	7.9550819		7.9550996	12-0449004	10.0000177		
22	7.9688698	9.9999812	7.9688886	12.0311114	10.0000188		
33	7.9822334	9.9999800	7.9822534	12.0177466	10.0000200		
34	7.9951980	9-9999788	7.9952192	12.0047808	10.0000212		
35	8.0077867	9.9999775	8.0078092	11.9921908	10.0000225		2 1000
25	3.0200207	9.9999762	8.0200445	11-9799555	10.0000238		
17	8.0319195	9.9999748	8.0319446	11.9680554	10.0000252		
38	8.0435009	9-9999735	8.0435274	11.9564726	10.0000265		
39	8.0547814	9.9499721	8.0548094	11.9451905	10.0000279		
40	8.0657763	9.9999700	8.0658057	11.9341943	10.0000294	The second second	-
41	8.0764997		8.0765306	11.9234694	10.0000309		
12	8.0869646	9.9999675	8.0869970	11.9130030	10.0000324		
13	8.0971832	9.9999660	3.0972172	11.9027828	10.0000340		
44	8.1071569	9.9999644	8.1072025	11.89279.75	10.0000355	11.0928331	10
45	8.1169262	9.9999628	8.1169634	11.8830366	10.0000372	-	-
40	8.1254710	9.9999611	8.1265099	11.8734901	10.0000389		
17	8.1358104	9-9999594	8.1358510	11.8641490	10.0000406		
8	8.1449532	9-9999577	8.1449956	11.8550044	10.0000423	11.8550468	12
19	8.1539075	9.9999559	8.1539516	11.8460484	10.0000441		
50	8.1626808	9.9999541		11.8372733	10.0000459		-
51	8.1712804	9.9999522	8.1713282	11.8236718	10.0000478		
52	8.1797129	9.9999503	8.1797626	11.8202374	10.0000497		
53	8.1879848	9.9999484	8.1880364	11.8119636	10.0000516		
54	8:1951020	9.9999464	8.1961556	11.8038444	10.0000536		
55		9.9999444	-	11.7958741	10 0000556		-
56		9.9999424		11.7880474	10.0000576		
57	8.2195811	9.9999403		11.7803592	10.0000597		100
58		9.9999382		11.7728047	10.0000518		
59		9.5999360		11.7653792	10.0000640		
60	0.2418353	9-9999338	0.2419215	11.7580785	10,000662	11.7581447	0
		Sine.	1	Tang.		Secant.	M

M	Sine	-1	[Tang		Secant.		
•	3.2418553	.99,9338	8.2419215	11.7580785	10.0000662	11.7581447	60
1	3.24903329	.,999316	8.2491015	11.7508985	10.0000684	11.7509668	59
2	8.2560743		3.2561649	11.7438351	10.0000706	11.7439057	58
	8.2630424	9.9999271		11.7368847		11.7369576	
4	3.26,8210			11.7300437		11.7301190	
5	8.273613	9.9999224	8.2766912	11.7233388	10.0000776	11.7233864	55
6	3.28 32434	1.9999200	8.2633234	11.7166766	10.0000800	11.7167566	54
7	3.289773	2.9999175		11.7101441		11.7102266	
	3.2952057	1.9999150		11.7037083		11.7037933	
5	3.3025460		8.3026335	11.6973565		11.6974540	
IC	8.3087641	9.9999100	8.3088842	11.6911157		11.6912059	-
11	8.3149536	9.9999074		11.6849538		11.6850464	
12	8.3210269	9.9999047		11.6783779		11.6789731	
13	8.3270163	9.9999021		11.6728857		11.6729837	
14	8.3329243	9.9998994		11.6659751		11.6670757	40
15	8.3397529	9.9998966	8.3388563	11.6611437	10.0001034	11.6612471	45
16	8.3445043	9.9998939	8.3446105	11.6553895			44
	8.3501805			11.6497105		11.6498195	
	8.3557835			11.6441047		11.6442165	
19	8.3613150		8.3614297	11.6385703		11.6386850	41
20	8.3667769	9-9998824	8.3668945	11.6331055			40
21	8.3721710	9.9998794	8.3722915	11.6277085	10.0001205	11.6278290	35
2:	8.3774988	9-9998764		11.6223777		11.6225012	
	8.3827620			11.6171114		11.6172380	
	8 3879622			11.6119082		11.6120378	
29	8.3931008	9-9998572	8.3932335	11.6057664	10,0001328	11.6068992	35
20	8.2981793	9.9998641	8.3983152	11.6016848	10.0001359	11.6018207	34
2	8.4031990	9.9998609		11.5965619		11.5968010	
28	8.4081614	9.9998577		11.5916963	10.0001423	11.5918386	3
29	8 4130676	9.9998544		11.5867868	10.0001456	11.5869324	
30	10	9.9998512	8-4180679	11.5819321	10.0001488	11.5820810	3
10.5		Sine.		Tang.	1 - 1 - 1 - 1	Secant.	N

w Sine.	1	Tang.	April 18 mag 1	Secant.		1
	9.9998512	8.4180679	11.5819401	10.0001488	11.5820819	3
	9-9998478	8.4228690	11.5771310	10.0001522	11-5772832	a
28.427462	19.9998445	8.4276176	11.5723824	10-0001555	11.5725379	2
2.8.422156	119.9998411	8.4323150	11.5676850	10.0001589	11,5678439	2
4 8.436799	99999370	8-4369622	11.5630378	10.0001624	11.5632001	2
\$ 8-441394	9-9998342	8.4415603	11.5584397	10,0001658	11.5586056	2
6 8.44 5040	9.9998306	8.4461102	11.5538897	10,0001694	11.5540591	2.
7 8.450440	9.9998271	8.4506131	11.5493 69	10,0001729		
8 8 4 548 93	19.9998235	8-4550699	11-5449301	10.0001765	11.5451066	2
08.459301	19.9598199	8.4594814	11-5405186	10,0001801		
0 8.463664	9.9998162	8.4038486	11.5361514	10.0001838	11.5363351	2
18.4679850	9.9998125	8.4681724	11.5318275	10.0001875	11.5320150	
8 472262	9.9998088	8.4724538	11.5275462	10 0001912	11.5277374	1
8.476498	9.9998050		11.5233067	10.0001950	11.5235016	1
8.480593	9.9998012	8.4808920	11.5191080	10-0001988	11.5193068	1
8.484847	9-9998974	8.4850505	11.5149495	10.0002026	11.9151421	
	9-9997935	8.4891696	11.5108304	10.0002065	11.9110368	
	9.9997896	8.4932502	11.5067498	10.0002104		
8.407078	9-9997856	8.4972928	11.5027072	10.0002144	11.5029216	
	9-9997817	8 5012982	11.4987018	19.0002183	11-4989202	
	9-9997776	8.5052673	11.4947329	10.0002224	IL4949553	1
_	9-9997736	8.5092001	11.4507999	10.0002264	11.4010264	
	9.9997695	8.5130978	11-4869022	10.0002305		蠺
	9-9997653		11.4830387	10.0002347		
8.5205514		8.5207902	11-4792098	10.0002388	11.4764486	夏
8.4243430	9.9997570	8.5245860	11-4754140	10.0002430		
	9.9997527	8. 4282400	11.4726510	10.0002473	11.4718080	
	0.9997484		11.4679203	10.0002516		3
	9-9997441		11.4642233	10.0002555		
	9-9997398		11.4605534	100002502		
8.442810	9-9997354	8.5430838		10.0002646		1
- William	Sine.	1. 11.			Secent.	

A Table of Artificial Sines,

2 Degrees,

Sine.	Tang.		Secant.		
8.54281929.99	97354 8.5430838	11.4569162	10.0002646	11-4571806	60
13.5464218 9-99		11.4533091	10.0002691	14.4535782	55
3 3.549 9948 9.99	97265 8.5502583	11.4497317	10.0002735	11.4500052	51
28,5535386 9.99	97220 8.5538160	11-4461834		11.4464614	
48.5570536 9.99		11.4426638		11.4429464	
8.5605404 9.99	97128 8.5608276	11.4391724	10.0002872	11.4394596	5
68.5639994 9-99	97082 8.5642912	11.4357088	10.0002918	11.4360006	5
8.5674310 9.99	97036 8.567727	11.4322735	10.0002964	11.4325690	5
88-5708357 9-95	95989 8.5711368	11.4288632		11.4291643	
98,5742139 9.99	96942 8.5745197	11.4254803	10.0003058	11.4257861	5
08.5774660 9.99	96894 8.5778766	11.4221234	10.0003106	11.4224340	5
8.5808923 9.99		11.4187923	10.0003154	11.4191077	ا
28.58419339.99	96798 8.5845136	11.4154864		11.4158067	
8.5874694 9.99	96749 8.5877945	11.4122055		11.4125306	
8.59072099.99	96700 8.5910509	11.4089491		11-4092791	
8.5939483 9.99	96650 8.5942832	11.4057168		11.4060517	
68.5971517 9-99	The state of the s	11.4025083	10.0002200	11.4028483	1
7 8.6003317 9.99		11.3993233		11.3996683	
8 8.6034886 9.99	96500 8.6038386	11.3961614		11.3965114	
8.6066226 9.99	96449 8.6069777	11.3930223		11.3933774	
08.6097341 9.99	96398 8.510094	11.3899057		11.3902659	
18.6128235 9.95	THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN THE OWNER, THE PERSON	11.3868111	10.000264	11.3871769	Ī,
28.41589109.95		11.3837384		11.3841090	
28.61893699.9		11.3806873	10.000374	11.3810631	
48.62 196 16 9.99		711.3776573	10.000281	11.3780384	d
\$8.62496549.99		8 11.3746482		11.375034	
68.6279484 9.99	The second secon	11.3716598		8 11.372051	٦.
8.63091119.99		11.3686917		11.369088	
84.6338537 9-95		11.3657437		6 11.366146	
98.6367764 9.9		11.3628155		111.363223	
08.6396796 9.9	994865 8.640092	111.3590059		511.360320	
	ine.	Tang.		Secant.	-

M	Sine.		Tang.		Secant.		1
10		9.9995865	8.6400931	11.3599069	10.0004139	11,3603204	1
1		9.9995809	8.6429825	11.3570175	10,0004191	11-3574366	1
5		9-9995753	8.6458528	11.3541472	10.0004247	11.3545718	
13		9-9995697	TO A SALE OF THE PARTY OF THE P	11.3512956	10.0004303	11.3517258	2
14	8.6511016		8.6515375	11.3484821	10.0004359	11.3488984	13
5		9-9995584	8.6543525	11.3456478		11.3460893	100
6		9.9995527	8.6571490		THE RESERVE OF THE PROPERTY OF THE PERSON NAMED IN	11.3432983	1000
7		9.9995469		11.3400721		11-3405252	
8	8.6622363		8.6626891	11-3373109		11.3377697	
9		9.9995353	8.6681408	11.3345679		11.3350316	
0						STREET, THE PARTY OF	
A		9.9995236		11.3291303		11.3296068	
2		9.9995116		11.3237607		11.3242490	
3		9.9995056		11.3211004		11.3215948	
-		9-9994996		11.9184563	10.000,004	11.3189597	E
-		9-9994935		11.3158281	1	11-3163346	7
7		9.9994874		11.3132156		11-3137202	
8		9-9994812		11-3106187		11.3111375	
9		9-9994750		11.3080371	10.0005250	11.3086621	1
0	8.6939980	9-9994588	8.5945292	11.3054708	10.0005312	11.9060019	1
ī		9-9994625	8.6970806	11.3029194	10.0005375	11.3034569	
2		9-9994562		11-3003828	10.0005438	11.3009266	
3	-	9-9994498		11.2978610	10.0005502	11.2984111	
4		9-9994435	The state of the s	11.2953935	10.000 5565	11.2999101	8
5		9-9994370		11.2928605		14.2934234	
6		9.9994306		14-2003815	10.0003694	11.2909510	1
7		0.9994341	4	11.2879166	10.0005759	11,2884925	
8		9.9994176		11.2854655	10.0005824	11.2860480	
9		9.9994110		11.2890281	10-0005890	11.8835176	1
0	-/100003	5.7774044	0.713330	11.200042	10.0005958	11.2871998	
		Sine.			1.	Secant.	M

N	Sine.	Î	Tang.		Secant		1
0	8.71880029	9994044	1.71939581	1.2806042	10.0005956	11.2811998	60
1	8.7212040 9.	9993978	.7318063 [10.0006022		
:	8.7235946 9	111111111111111111111111111111111111111	72420351		10.0006089		
3	8.72597219		1.72658771		10.0006156		
4	8.7283366 9	and the second s	3.72895891 3.73131741		10.0006292		
5	8.7306882 9		The second secon				
6	Company of the Company of the	The second secon	8.7336631	the state of the s	10.0006360		
7		ALCOHOLD AND DESCRIPTION OF	8.7359964			11.262332	
	8.7376675		8.7406258		10.0006567		
	8.7422586		8:7429222			11.257741	
6.33	A STATE OF THE STA	-	8.7452067		10.0006707	11.255464	040
	8.7468015		8.7474792			11.253198	
	8.7490553		8.7497400		44 4	11.250944	
ŧ	8.7512973		8.7519892			11.248702	
H	8.7535278		8.7542269		10.000699	111.246472	24
1			8.7564531	11.2425469	10.000706	11.244253	14
200	8.7579646		2.7586681			11.242045	
	8,7601g12		8.7608719	11.2391281		7 11.239848	
1	9 8.7623366	9.9992720		11.2369353		11.237663	
3	0 8.7645111	9.9992646	8.7652465	11-2347539	10.000735	11.235488	94
2	1 8.7666747	9.9992572	8.7674175	11.232582	10.000742	11.233329	3 3
2	8.7688275			11.230422		2 11.231172	
	\$ 8.7709697			11.228272		6 11.229030	
	4 8-7731014			11.226133		1 11.22689	
5	5 8.7,752226	9-9992274		11.224004	-	6 11.22477	-
-		9.9992198		11.221886		2 11.22266	
	7.8.7794340			11.219778	2 10.000787	8 11.22056	60 3
1:	8 8.7815244	9.9992046		11.217680		4 11.21847	50,3
1	8.7836048	9.9991969	8-7864861	11.215592	0 10.000810	8 11.21639	52 3
1	8.7856753	Sine.	3.700.301	Tang.		Secan	

4	Sine.		Tang.	. 4	Secant.		
	8.7856753	.9991892	8.7864861	11.2135139	10.0008108	11.2143247	30
-	8.78773595	1	8.7885544	11.2114456	10.0008185	ACCUMULATION OF THE PROPERTY OF THE PARTY OF	mar.e
	8.7897867		8.7906120	11.2093870	10.0008263	MERCHANT STATE OF THE STATE OF	200
3	8.7918278	7.9991659	8.7926620	11.2073380	10.0008341	RESERVOY STOLEN TO LONG CAPPER BY	200
	8.7938594		8.7947014	11.2052986	10.0008420		
ч	8.7958814		8.7967313	11.2032687			
	8.7978941		8.7987519	11.2012481	10.0008578		
	8.7998974		8.8007632	11.1992368	10.0008658		
	8.8018915		8.8027653	11.1952417	10.0008818		
9	8.8038764 8.8058523	0.0001101	8.8047583 8.8067422		10.0008899		
-				11.1912828	10.0008980		200
	8.8078192		8.8087172 8.8106834	11.1893166		11.1902223	
	8.8117264		8.8126407	11.1873593		11.1882736	
14			8.8145794	-0. (10.0009226	11.1863332	10
15	00-44-04	9.9990691	8.8165294		10.0009309	11.1844015	Q.
46		9.9990608	8.8 184608	11.1815392	10.0009 392	11.1824783	1
17		9.9990525		11.1796162	10.0009475	11.1805637	
18	1	9.9990441		11.1777016	10.0009559	11.1786575	냃
19		9.9990357		11.1757954	10.0009043	11.1767596	H
50		9.9990273		11.1738974		11.1748701	I.
51		9.9990188		11.1720076	10.0009812	A STREAM OF BUILDING TO THE PARTY.	몿
52		9.9990103		11.1701259	. On Asia T. C. (C. (C. (C. V.) V. (C. C. V.) (C. C. V.)	11.1711156	10000
53		9.9990017		11.1682522		11.1673934	
54		9.9989845		11:1645288		11.1655443	
2				11.1626789		11.1637031	
5		9.9989758		11.1608367		11.1618696	
3		9.9989584		11.1590023	THE RESERVE OF THE PARTY OF THE	11.1600439	1000
5		9.9989496		11.1571755	The second secon	11.1582259	
6	8.8435845	9.9989408		11.1553563	10.0010592	11-1564155	
		Sine.		Tang.	1	Secant.	N

2 3 4	8.8453874 8.8471827 8.8486907	9.9989408 9.9989319 9.9989230		11.1535446		11.1564154	60
2 3 4	8.8453874 8.8471827 8.8486907	9.9989319		11.1535446	10.0010681		
2 3 4	8.847 1827 8.8489907	9.9989230	8.8482507			11.1546126	
345	8.8485907	0.0080141				11.1528173	
4	8.8407412	D. 22. 2.4.	8.8500556			11.1510293	
5	00	9.9989052		11.1481539		11.1492488	
-0.00		9-9988962		11.1463717			-
		9.9988871	8.8554034	11.1445900		11.1457095	
		9.9988780	8.8571713			11.1421990	
		9.9988498				11.1404543	
10	8.861282	9.9588506	8.8624327			11.1387167	
		9.9988414	8.8641729		10.001158	611.1360861	46
		69.9988321	8.86 4004	11-1340944	10.001167		48
		9-9988228		11.1323683	10.001177	2 11.1335455	47
÷		69-9988135		11.1306489	10,001186	SI1.1318354	44
		09-9988041		11-1 289362	10,001195	9 11.1301320	4
Ŧ	8.871564	69.9987947	8.8727699	11.1272301	10.001205	3 11.1284354	14
۴		69-9587853		11.1255306	10.001214	7 11.1267454	14
	8.874938	9.9987758	8.876162	11.1238377		2 11.1250619	4
		09-998766			10.001333		14
20	8.878285	4 9-9987567	8.879528	11.1304714	10.001243	3 11.1217146	14
•	8.879949	39-9987471	8.881202	11.1187978		9 11-1200 507	3
2	8.881606		8.882869		10.001262		3
3		19.998727			10.001272	THE RESERVE AS A SECOND	15
2	4 8.88490		8.886185		10.001181		1
2		89.998708			10.001291		13
3,	68.888174		3.889475	0000	10.001301	4 €1.1118257	/13
3	78.889800			911.1088881	10,001311	311.110199	년: 기:
Ľ	8 8.89 143C	19.998669	8 804266	0 41.1072580			43
ľ,	8.89464		8.804084	2 1 4 104015		111.1069649	.13
ľ		Sine		Tang.		Cocont	1

1	Sine.		Tang.		Secant.		* 2
	8.8 946433	9.9986591	8.8959842	11.1040158	10.0013409	11.1053567	30
	8.8952455	9.9986492	8.8975963	11-1024037		11.1037545	
	8.3978418	9.9986392	8.8992026	11.1007974	16.0013608	FF.1021582	28
	8.8994322	9.9986292	8.9008030	11.0991970	10.0013708		
	8.9010168	9.9986191	3.9023977	11.0976023	10.0013809		
	8.9025955	9.9986090	8.9039866	11.0900134	10.0013910	11.0974045	2
5	8.9041685	9.9985988	8.9055697	11.0944303	10.0014012	11.0958315	2
7	8.9057358	9.9985886	8.9071472	11.0928528	10. 0014114		
8	8.9072975	9.9985784		11.0912810	10-0014216		
	8.9088535			11.0897147	PERSONAL PROPERTY OF THE PROPERTY OF THE PERSON OF THE PER	11.0911465	200
0	8.9104039	9.9985579	8.9118460	11.0881540	10.0014421	11.0895981	2
I,	8.9119487	9-9985475	8.9134012	11.0865988	10.0014525	11.0880513	3
2	8.9134881	9.9985372	8.9149609	11.0850491		11.0865119	
3	8.9150219	9.9985268	8.9164952	11.083 5048		11.0849781	
4	8.9165504	9.9985163	8.9180340	11.0819660		11.0834496	
5	8.0180734	9.9985058	8.9195675	11.0804335	10.0014942	11.0819266	1
6	8.9195911	9.9984953	8.9210957	11.0789043	10.0015047	11.0804089	I
7	8.9211034	9.9984848	8.9225186	11.0773814	10.0015152	11.0788966	1
8	8.9226105	9-9984742		11.0758637		11.0773895	1
		9.9984636		11.0743513		11.0758877	I
0	8.9255089	9.9984529	8.9271566	11.0728440	10.0015471	11.0743911	L
I	8.9271003	9.9984422	8.9286581	11.0713419		11.0728997	
		9.9984315		11.0698448		11.0714134	
		9.9984207		11.0683529		11.0699322	
4	8.9315439	9.9984099		11.0668660		11.0684561	1
15	8.9330150	9.9983990	8.9346160	11.0653840		11.0669850	-
6		9.9983881		11.0639071		11.0655189	
17	8.9359422	9.9983772		11.0624350		11.0640578	
18		9.9983563		11.0609679		11.0626017	
19		9-9983553	8 9404944	11.0595050		11,0511504	
0	8.9402960	9.9983442	8.9419518	11.0580482	10.0010558	11.0597040	_
		Sine.		Tang.		Secant.	1

5 Degrees,

11	Sine.	1	Tang.		Secant.		*
0	.9402960	9.9983442	8.9419518	11.0580482	10.0016558	11.05970406	50
13	.9417376	9.9983332		11.0565956		11.0582624	
3	.9431743	9.9983220		11,0551477		11.0568257	58
3 4	.9440003	9.9983109	8.9462954	11-0537046	10.0016891		5
4	9460335	9.9982997	8.9477338	11.0522662		11.0539665	
Bed (17 S S S S S S S S S S S S S S S S S S S	9.9982885	-				5
6	.9488739	9.9982772		11.0494033	10.0017228		5
7	8.950287	9.9982660		11.0479789	10.0017340	11.0497129	
Ä	8 042000	9.9982546	8.04846	11.0451436	10.0017467	11.0469004	2
3	8.054400	9,9982318		11-0437328	10.0017682	11.0455009	5
	Manager and the second	9.9982204		11.0423265		11.0441060	-
		9.9982089		11.0409246	10.0017911	11.0427157	
		9.9981974	8.9604721	8 11.0395272	10.0018026	11.0413297	
14	8.960051	9.9981859	8.961865	011.0381341	10.0018141	11.0399483	
15	8.961428	9.9981743	8.963254	11.0367455		11.0385712	1
16	8.962801	4 9.9981629		611.0353612	10.0018374	11.0371986	
17	8.964169	79.9981510	8.966018	811.0339811		11.0358363	
18	8.955533	79-9981393	8.967394	4 11.0326056	10.0018607	11.0344663	K
19	8.966893	49.9981275		8 11.0312342		11.0331066	1
-		7 9.9981158	1	011.0398670		11.0317513	1
91	8.969599	9.9981040		911.028504		11.0304001	
22	0.970946	89.998092		11.027145		11.0290532	
4	8.07269	9.998080		7 11.024440	3 10.001919	11.0277105	
7	8-074562	4 9.998056		0 11.023094		11.0250376	-1
	Particular residence of the last section of th	69.998044		3 11.021751		11.0237074	-1
		18 9.998032		11.020413		7 11.0223812	
2	8.978040	8 9.998020		6 11.019079	A. C. Spiller	8 11.0210592	
		199.998008	1 8.982250	711.017749	3 10.001991	911.019741	
3	8.98157	199.998996	8.98357	59 11.016423		011.018427	
	art years.	Sine.	1	Tang.		Secant.	1000

M	Sine.		Tang.	Section 1	Secant.		1
30	9-9815729	9.9979960	8.9835769	11.0164231	10.0020040	11.018427	3
		9.9979838	8.9848991	11.0151009	10.0020162		
		9-9979716	8.9862173	11.0137827	10.0020284	11.015811	12
		9-9979593		11.0124683	10.0020407	11.0145090	2
		9-9979470		11.0111579	10.0020530	11.013211	2
35	9.9880834	9-9979347	8.9901487	11.0098513	10.0020653	11.0119166	52
36	9.9893737	9.9979223	8.9914514	11.0085486	10.0020777	11.010626	2
		9.9979097	8.9927503	11.0072497	10.0020901		
		9.9978975	8.9940454	11.0059546	10.0021025	11.008057	2
		9.9978850	8.9953367	11-0046633	10.0021150	11.006778	2
10	9 9944968	9-9978725	8.9966243	11.0033757	10.0021275	11.0055032	2
1	9-9957681	9-9978590	8.9979081	11.0020919	10.0021410	11.0042210	1
		9-9978473		11.0008117	10-0021527	11.0029644	L
		9.9978347	9.0004647	10.9995353	10.0021653	11,0017006	1
4	9.9995595	9:9978220	9.0017375	10 9982625	10.0021780	11,0004406	I
5	9.0008160	9-9978093	9.0030066	10.9969934	10.0021907	10.9991840	1
5	9.0020687	9-9977965	9.0042721	10.9957279	10.0022034		
		9-9977838		10.964466c	10.0022162		
8	9.0045534	9.9977710		10.9632076	10.0022290		
9	9.0058053	9.9977582	9 0080471	10.9919529	10,0022418		
0	9.0070436	9-9977453	9.0092984	10.9907019	10.0022547		
I	9.0082784	9-9977323	9.010461	10.9894539	10.0022677		-
		9.9977194		10.9882097	10.0022806	10.0004004	
3	9.0107374	9-9977084		10.9869690	10.0022936	10.0802626	5
4	9.0119616	9.9976933		10.9857318	10.0023067	10.0880284	
5	9.0131823	9.9976803		10.9844979	10.0023197		
-		9.9976672		10.9832675	10.0023328		
		9.9976540		10.9820406	10,0023460		2
		9.9976408		10.9808169	10.0023592		
		9.9976276		10.9795967	10.0023724	10.0810601	. 2
0	9.0192346	9.9976143	9:0216202	10.9783798	10.0023857	10.08076-4	
-		Sine.				Secant.	_

84 Degrees.

Hhh

A Table of Artificial Sines,

6 Degrees.

M	Sine		Tang.		Secant.		
•	9.0192340	9.9976143	9.0216202	10.9783798	10.0023857	10.9807654	60
-	9.0204348	The second second second	Company of the Control of the Contro	10.9771626	10.0023989	10.9795652	59
		9.9975877	9.0240441	10.9759559	10.0024123	10.9783682	58
3	9.0228254	9-9975743	9.0252510	10.9747490		10.9771746	
		9.9975609		10.9735452		10.9759844	
5	9.0252027	9-9975475	9.0276552	10.9723448	10.0024525	10.9747973	55
6	9.0263865	9-9975340		10.9711476	10.0024660	10.9736135	54
		9-9975205	9-0300464	10.9699536		10.9724331	
		9-9975069		10.9687627		10.9712558	
		9-9974933		10.9675751		10.9700818	
10	9.0310890	9-9974797	9.0336093	10.9563907	10.0025203	10.9689110	50
11	9.0322567	9-9974660		10.9652094	10.0025340	10.9677433	49
		9.9974523		10.9640312		10.9665788	
		9-9974386	9.037 1439	10.9628561		10.9654175	
14	9.0357407	9-9974248	9.0383159	10.9616841	10.0025752	10.9642593	46
15	0.0308028	9-9974110	9 03 94 64 0	10 9605152		10.9631042	
16	9.0380477	9-9973971		10.9593494	10.0026029	10.9619523	44
200	200 100 100 100 100 100 100 100 100 100	9-9973833		10.9581866	10.0026157	10.9608034	43
		9-9973693		10.9570269		10.9596576	
	9-0414852			10.9558701	10.0020440	10-9585148	41
10	9.0426249	9-9973414	9.0452830	10.9547164		10.9573751	40
		9-9973273		10.9535657		10.9562383	39
		9-9973132		10.9524179		10.9551046	-
		9-9972991		10.9512730		10.9539739	37
		9.9972850		10.9501311		10.9528462	36
100		9-9972708		10.9489922	10.0027292		35
		9-9972566		10.9478561		10.9505995	34
		9-9972423		10.9467229	10.0027577		33
				10.9455926	10.0027720		33
		9-9972137		10-9444651	10.0027603	10.9472515	31
	2.0230200	y-9971993	9.0500595	10-9433405	10.001007	10.9461412	30
		Sine		Tang.		Secant.	M

Sine.		Tang.	542 C	Secant.	19.00	I
09.0538588	9-9971993	9.0566595	10.9433405	10.0028007	10.946141	13
1 9.0549661	9.9971849	9.0577813	10.9422187		10-9450335	
2 3.0560706			10.9410998		10.9439294	
39.0571723	9-9971559	9.0600164	10.9399836	10.0028441	10.9428277	12
4 9.0582711	9.9971414		10.9388703	10.0028586	10.9417289	12
5 9.0593672	9-9971268	9.0622403	10.9377597		10-9406328	200
6 9.0604604	9.9971122		10.9366518	10.0028878	10.9395396	þ
7 9.0615509	9.9970976		10.9355467	10.0039034		
8 9.0626386	9.9970829		10-9344444	10.0029171		
9 9.0637235	9.9970682		10.9333447	10.0027318		
0 9.0648057	9-9970535	9.0677522	10.9322478	10.0029465	10.9351943	13
1 9.0658852	9-9970387		10.9311535	10.0029613		
2 9.0669619	9-9970239		10.9300619	10-0029761		
2 9.0680360	9.9970090		10.9289730	10.0029910		
4 9.0691074	9.9909941		10.9278867	10-0030059	10.9308926	L
5 9.0701761	9-9969792	9.0731969	10.9268031	10.0030208	10.9298139	
6 9.0712421		9.0742779	10.9257221	10.0030358	10.9287579	-
7 9.0723055	9-9969492	9.0753563	10.9246437	10.0030508	19.9276945	1
8 9.0733663	9-9969342	9.0764321	10.9235679	10.0030658	10.9266337	1
9.0744244	9-9969191	9-0775053	10.9224947	10.0030809	10.9255756	þ
9.0754799	9.9969040	9.0785760	10.9214240	10.0030960	10.9245201	b
9.0765329		9.0796441	10.9203559	10.0031112	10.9234671	
2 9.0775832	9.9968726		10.9192904	10.0031264		
3 9.0786310	9.9968584		10.9182274	10.0031416		
4 9.0796762	9.9968431	9.0828331	10-9171669	10.0031569		
9-0807189	9-9968278	9.0838911	10.9161089	10,0031722	10.9192811	ł
9.0817590		9.0849466	10.9150534	10.0031875		о и.
9.0827966	9.9967071		10-9140004	10,0032020	10.0172024	1
8 9.0838317	9.9967817		10.9129499	10.0032183		
9.084864	9-9957662		10.9119019	10.0032338		
9.0858945	9-9967507		10.9108562	10.0032493		
1 1000	Sine.	1			Secant.	1

M	Sine 1	1	Tang.		Secant.	10.00	
0	9.0858945	9.9967507	9.0891438	10.9108562	10.0032493	10.9141055	60
			9.0901869		10.0032648		
2	9.0879473	9.9967196	9.0912277	10.9087723	10.0032804		
2	9.0889700	9.9967040	9.0922660	10.9077340	10.0032960		
4	9.0899903	9.9966884	9.0933020	10.9056980		10.9100097	
5	9.0910082	9.9966727	9.0943355	10.9056645	10.0033273	10.9089918	55
6	9-0920237	9-9966570	9.0953667	10.9046333		10.9079763	
7	9,0930367	9-9966412	9.0963955	10.9036045		10.9069633	
8	9:0940474	9-9966254		10.9025781		10.9059526	
	9.0950556			10.9015540		10.9049444	
10	9.0960615	9-9965937		10.9005322		10.5039385	-
11	9.0970651	9.9965778		10.8995128		10.9029349	
12	9.0980662	9.9965619	9.1015044	10.8984956		10.9019338	
13	9.0990651	9-9965459	9.1025192	10.8974808		10.9009349	
	9.0000616			10.8964683	10,0034701	10.8999384	46
19	9.0010558	9.9965138		10 8954580		10.8989442	-
16	9.1020477	9.9964977	9.1055500	10.8944500	10.0035023	10.8979523	44
19	9.1030373	9-9964816	A Committee of the Comm	10.8934443	10.0035184	10.8969627	43
	9.1040246		11 0 4	10.8924409		10.8959754	
U	9-1050096	9-9964493	9.1085004	10.8914396	10.0035507	10.8949904	4
2	9.1069924	9-9964330		10.8904406		10.8940076	-
2	19.1069729	9.9964167	9.110556	10 8894438		10.8930271	
2	0.107951	9.9964004	9.111550	10.8884492		10.8920488	
	20.108927	9.9963841	9.112543	110-8874509		10.8910728	
2	49.109901	9.996367	9.113533	10.8864667		10.8900990	
				10.8854787		10.8891274	1 2
2	69.111842	9.996334	9.115507	10.8844928	10.0036652	10.8881580	3
2	70.112809	29.996318	9.116490	9 10.8835091	10.003081	10.8871908	
2	80.113774	0.996201	B)9.1.17472	4 10.8825270		10.886225	
3	99.114737	9.996285	9.118451	8 10.8815482	10.003714	10.8852630	
3	9.115097	9-990208	9-119429	1 10.8805709	10.003/31/	10.884302	3 3
1		Sine	14	Tang.	4	Secant.	1

M	Sine.		Tang.	1	Secant.		
~=		9.9962686	9-1194291	10.8805705	10.0037314	10.88430	12
3 4	9.1166562 9.1176125 9.1185667 9.1195188 9.1204688	9.9962352 9.9962185 9.9962017 9.9961849	9-1213773 9-1223482 9-1233171	10.8795974 10.8786227 10.8776518 10.8766829 10.8757161	10.0037481	10.883341 10.88238 10.881431 10.880481	8
9 0	9.1214167 9.1223624 9.1.33061 9.1242477 9.1251872	9.9961512 9.9961343 9.996174 9.9961004	9.1252486	10.8747514 10.8737888 10.8728282 10.8718697	10.0038319 10.0038488 10.0038657 10.0038826 10.0038996	10.878583 10.877637 10.876693 10.875752	3 2 9 2 2 2 2
3 9 9 9 9 9	9.1261246 9.1270600 9.1279934 9.1289247 9.1298539	9.9960663 9.9960492 9.9960321 9.9960149	9.1300413 9.1309937 9.1319442 9.1328926 9.1338390	10.9699587 10.8690063 10.8680558 10.8671074	10.0039166 10.0039337 10.0039508 10.0039679 10.0039851	10.873875 10.872940 10.877006	4 1 5 1
7 9 9 9 9	9.1307812 5 9.1317064 5 9.1326297 5 9.1335509 9 9.1344702 9	-9959804 -9959631 -9959458 -9959284	9.13478351 9.13572601 9.13666651 9.1376051 9.1385417	0.8642740	10.0040023 1 10.0040196 1 10.0040369 1 10.0040542 1 10.0040716 1	0.8692188 0.8682936 0.8673703 0.8664401	1 1 1
9 9 9	.13538759 .13630289 .13721619 .13812759 .13903709	9958936 9958761 9958586 9958411	9.1394764 1 9-1404092 1 9-1413400 1 9-1422689 1 9-1431959 1	0.8595908	10.0040889 1 10.0041064 1 10.0041239 1 10.0041414 1 10.0041389 1	0.8646125 0.8636972 0.8627839	
9.	14085019 14085019 14175379 14265559	9958059 9957882 9957705 9957528	0.1441210 10 0.1450442 10 0.1459655 10 0.1458850 10 0.1478025 10	0.8549558	10.0041765 10.0041941 10.0042118 10.0042295 10.0042472	0.8600555 0.8591499 0.8582463	4
1		Sine.		Tang.	THE RESERVE OF THE PARTY OF THE	Secant.	M

A Table of Artificial Sines,

8 Degrees.

M	Sine.		Tang.		Secant.		
•	9-1435553	9-9957528	9.1478025	10.8521975	10.0042472	10.8564447	60
-	STREET, SQUARE, SQUARE	9.9957350	The state of the s	10.8512818		10.8555468	
2	9.1453493	9.9957172		10.8503679	10,0042828	10.8546507	5
3	9.1462435	9.9956993		10.8494559		10.8537565	5
	9-1471358			10.8485457	10.0043185		5
5	9.1486252	9.9956635		10.8475373	10.0043365		-
	9.1489148			10.8467308	10.0043544	10.8510852	
	9.1498015			10.8458261	10.0043724		
		9 9956095		10.8449231	10.0043905		
		9.9955915		10.8440220	10.0044085		
to	9.1524507	9-9955734		10.8431227	10.0044266		1000
11	9-1533301	9.9955552		10.8422252		10.8466699	
		9-9955370		10.8413294		10.8457924	
		9.9955188		10.8404354	10.0044812		
		9.9955005		10.8395431	10.0044995	10.8440426	40
15	9.1308296	9.9954822	9-1613473	10.8386527	10.0045178	10.6431704	4
16	9.1577000	9.9954639	9.1622361	10.8377639	10.0045361		
		9-9954453		10.8368769	10.0045545		
18	9.1594354	9-9954271		JO.8359917	10.0045729		
		9.9954087		10.8351081		10.8396995	
10	9.1611639	9.9953902	9-1657737	10.8342263	10.0046098	10.8388361	40
21	9.1620254	9-9953717	9.1666538	10.8333462	10.0046283	10.8379746	35
12	9.1628853	9.9953531		10.8324678	10.0046469		
		9.9953345		10.8315911	10.0046655		
		9.9953159		10.8307161	10.0046841	10.8354002	3
25	9.1654554	9.9952972	9.1701572	10.8298428	10.0047028	10.8345456	3
26	9.1663079	9.9952785		10.8289711		10.8336926	
27	9.1671586	9.9952597	9.1718989	10.8281011	10,0047403	10.8328414	3
28	9.1680082	9.9952409		10.8272328	10.0047591	10.8319919	32
29	9.1688559	9.9952221		10.8263662	10.0047779	10.8311441	31
30	9.1697021	9.9952033	9-1744988	10.8255012	10.0047967	10-8302979	3
4		Sine.		Tang.		Secant.	M

A	Sine.		Tang.		Secant		
-		9.9952033	9.1744980	10.8255012	10.0047967	10.830297	31
		9.9951844	9.1753622	10.8246378	10.0048156	10.8294534	2
2	9.1713893	9.9951654	9.1762239	10.8237761	10.0048346		
3	9.1722305	9.9951464	9.1770840	10,8229160	10.0048536		
4	9.1730699	9.9951274	9-1779425	10.8220575	10.0048726		
5	9-1739077	9.9951084	9-1787993	10.82 12007	10.0048916	10.8200923	2
5	9.1747439	9.9950893	9.1796546	10.8103454	10.0049107		
7	9.1755784	9.9950702	9.1805082	10.8194918	10.0049298		
8	9.1764112	9.9950510	9.1813602	10.8186398	10.0049490		
_	Q. 177943¢	0.00502181	9.1822106	10.8177894	10.0049682	10.8227575	2
0	9.1780721	9.9950126	9.1830595	10.8169405	10.0049874	10.8219279	2
1	9.1789001	9-9949933	9.1839058	10.8160932	10.0050067		
		9-9949740	9.1847525	10.8152475	10.0050262		
1	9.1805512	9.9949546	9.1855966	10.8144034	10.0050454	10.8194488	I
1	9.1813744	9-9949352	9.1864392	10.8135608	10.0050648	10.8186256	H
,	9.1821960	9.9949158	9-1872806	10.8127198	10.0050842	10.8178040	
c	9.1830160	9.9948964	9.1881196	10.8118804	10.0051039		
,	9.1838344	9-9940709	9.1889575	10.8110425	10.0051231		
1	9.1846512	19-9945573	9.1897939	10,8102061	10.0051427		
	0.1844664	0.9948277	9.1906287	10.8093713	10.0051623		
0	9.1862802	9.9948181	9.1914621	10.8085379	10.0051819	10.8137199	-
1	9.1870923	9-9947985	9.1922939	10 8077051	10.0052015		
1	9.1879029	9-9947788	7-1931241	10.8068759	10.0052212		
1	9.1887120	9-9947591		10.8050471	10.0052409		
1	9.1895195	9-9947393	9.1947802	10.8052198	10.0052607		
5	9.1903254	9-9947195		10.8043941	10 0052805		-
6		9.9946997	9.1964302	10.8035698	10.0053003		1
7	9.1919328	9.9946798		10.8027470	10.0053202		1
8	9.1927342	9-9946599		10.8019257	10.0053401		
9	9.1935341	9.9946399	9 1988942	10.8011059	10,0053601	10.8004659	
0	9-1943324	9.9946199	9.1997125	10.8002875	10.0053801	10.5050676	1
	1. 1	Sine.		Tang.	1	Secant.	M

M	Sine.	400	Tang		Secant,		
0	9-1943324	9.9945190	9.1997 125	10.8002875	10.0053801	10.8056679	60
1	9.1951293	9.9945999	9.2005294	10.7994705	10.0054001	10.8048707	55
	9.195924			10.7986551		10.8040753	
	9.1967186			10.7978411	10.0054403	10.8032814	57
	9.1975110			10.7975285	10.0054604	10.8024860	50
5	9.1983019	9.99451941	9.203 /825	10.7962175		10.8016981	-
	9.1990913			10.7954078		10.8009087	
	7.1998793			10.7945996		10.8001207	
	9.2006658			10.7937928.	10.0055413	10.7993342	5:
	9.2014509		1.	10.7929874		10.7985491	
-	9.2022345		-	10.7921835		10.7977655	-
	9.2030167			10.7913809		10.7968633	
	9 2037974			10.7905797		10.7962026	
	9.2045767			10.7897800		10.7954234	
	9.2053545			10.7889816		10.7946455	
4	9.2061309		1				-
16		9.9942950	9.2120109	10.7873891	10.0057050	10.7930941	4
	9.2076795			10.7865949	10.0057227	10.7923205	4
	9.2084516			10.7858020		10.7915484	
	9.2092224		0.214770	10.7842205	10.0047678	10.7900083	*
							100
2		9.9941914		10.7834317	10.0058088	10.7892403	3
2		9.9941706		10.7818583	10.0058502	10.7877086	10
	9 213055			10.7810736		10.7859448	
		9.9941079		10.7802903		10.7861824	
		9.9940870		10.7795083			
2		9.9940659		10.7787276	10.0060241	10.7854213	3
		9.9940449		10.7779482	10.0050441	10.7839033	3
	9.216853			10.7771702	10.0059762	10.7831464	3
1	9.2176092	9.9940027		10.7763935	10.0059973	10.7823908	ŀ
٢		Sine	17,5	Tang.		Secant.	12

9- Degrees.

M	Sine.		Tang		Secant		
30	9.2175092	9.9940027	9.2236065	10.7763935	10.0050973	10.7823908	30
31	9.2183635	9.9939815	9.2243819	10.7754181	10.006018,	0.7816365	
32		9.9939603	9.2251561	10.7749439		10-7808836	
33	9.2198680		9-225928,	10.7740711		10-7801320	
34		9.9939178		10.7732996		10.7793818	
35	9.2213671	9.9938965	9.2274706	10.7725294	10.0061035	10.2786329	2
3	9.2221147	9-9938752	9.2282395	10.7717605	10.0051248	10.7778853	24
37		9.9933538	9.2290071	10.7709929		10.7771391	
38	9.2236059	9.9938324	9.2297735	10.7702265		10.7763941	
39		9.9938109	9.2305386	10.7649614	the second secon	10.7756505	150
10	c.2250918	9.9937894	9.2313024	10.7686976	10.0062106	10.7749092	20
11	9.2258328	9.9937679	9.2320650	10.7679350	10.0062321	10 7741672	15
12	9-2265725	9-9937403		10.7671738		10.7734275	
13	9-2273110	9.9937247	9.2335863	10.7664137	10.0062753	10.7726890	I
4	9.2280481	9.9937030		10.7656549	10.0062970		
15	9.2287839	9.9936813	9.2351026	10.7648974	10.0063187	10.7712161	1
16	9.2295186	9-9936596	9.2358589	10.7641411	10.0063404	10.7704815	14
	9.2302518		9.2366139	10.7633861	10.0063622	10.7697482	1
		9.9936160	9.2373678	10.7626322	10.0063840	10.7690162	1
	9.2317145	9.9935942	9.2381203	10.7618797.		10.7682855	
sc	9.2324440	9-9935723	19-2388717	10.7611283	10.0064277	10.7675560	10
51	9.2331722	9.9935504	9.2396218	10.7603782	10.0064496	10.7668278	1
,2		3.9935285		10.7596292		10.7661008	
3	1.2346245			10.7588815	10.0064935		
54).2353494			10.7581350	10.0065156	10.7646506	1
55	9.2360726	9.9934624		10.7573897	10.0065376	10.7639274	
-	9.2367946	9.9934403	9-2433542	10.7566457	10.0065597	10.7632054	1
	9.2375153			10.7559028	10.0065819	10.7624847	
58	9.2382345	9.9933959		10.7551611		10.7617651	
50	9.2389532	9-9933737		10.7544206	10.0066263	10.7610468	
60	9.2396702	9-9933515		10.7536812	10.0066485	10.7603298	1
_		Sine.	1	Tang.		Secant.	M

M	Sine		Tang.		Secant.		1
0	9.2396702	9.9933515		10.7536812	10.0065485	10.7603298	6
1	9.2403861	9.9933292	9.2470569	10.7529431	10.0066708	10.7596139	5
		9.5933068		10.7522061	10.0066932	10.7588993	5
		9.9932845	9.2485297	10.7514703	10.0067155	10.7581859	5
4	9.2425264	9.9932621		10.7507357	10.0067379	10.7574736	15
5	9-2432374	9.9932396		10.7500022		10.7567626	
6	9-2439472	9-9932171		10.7492699	10.0067829	10.7560528	5
7	9-2446558	9-9931946	9.2514612	10.7485388	10.0068054	10.7553442	5
		9.9931720	4.2521912	10.7478088		10.7546368	
		9.9931494	9.2529200	10.7470800	10.0008506	10.7539305	2
0	9-2467746	9.9931268		10 7463523		10.7532254	
	9-2474784			10.7456257		10.7525216	
		9.9930814		10.7449003		10.7518189	
		9.9930587		10.7441760		10.7511173	
		9-9930359		10.7434528		10.7504170	
5	9-2502822	9-9930131		10.7427308		10.7497178	
		9.9929902		10.7420099		10.7490197	
		9.9929673		10.7412901		10.7483228	
		9.9929444		10.7405715		10.7476271	
		9-9929214		10.7398539		10.7469325	
		9-9928984		10.7391375	No. of the last of	10.7462391	
		9.9928753	the second of th	10.7384221		10.7455468	
		9.9928 522	The state of the s	10.7377079		10.7448556	
		9.9928291		10.7369947	THE RESERVE OF THE PARTY OF THE	10.7441656	
		9.9928059		10.7362827		10.7434767	1-
		9.9927827	-	10.7355717			
9	9.2578977	9-9927595		10.7348618		10.7421023	
		9.9927362		10.7341530		10.7414168	
		9.9927129		10.7334453	10.0072105	10.7407342	
	9.2606300	9.9926895		10.7320331		10.7393670	
		Sine	220/9099	Tang.	75759	Secant.	Í

M	Sine.		Tang		Secant.	A Property of the	-
30	9-2005330	9.9926661	9.2679669	10.7320331	10.0073339	10.7393670	30
11	9.2613141	9.9926427	9.2686714	10.7313286	10,0073573	10.7386859	29
	9.2619941			10.7305251	10.0073808	10.7380059	28
33		9-9925957	9.2700772	10.7299228	10.0074043	10.7373271	
34	9.2633507	9.9925722		10.7292214	10.0074278	10.7366493	Contact .
35	9.2640274	9.9925486	9.2714788	10.7285212	16.0074514	10.7359729	25
36	9.2647030	9.9925250	9.2721780	10.7278220	10.0074750	10.7352970	24
37		9.9925013	9.2728762	10.7271238	10.0074987	10.7346225	23
38	9.2660509	9.9924776	9-2735733	10.7264267	10.0075224	10.7339491	22
39	9.2667232	9-9924539	9-2742694	10.7255305	10.0075461	10.7332768	21
40	9.2673945	9-9924301	9.2749644	10.7250356	10.0075659	10.7326055	20
41	9.2580647	9.9924053	9.2756584	10.7243416	10.0075937	10.7319353	19
42		9.9923824		10.7236486		10.7312662	
43		9.9923585		10.7229566	10.0076415	10.7305981	17
44	9-2700689	9.9923346	9-2777343	10.7222657		10.7299311	
45		9.9923106	9-2784242	10.7215758	10.0076894	10.7292652	15
46	9-2713007	9.9922866	9.2791130	10.7208869	10.0097134	10.7286003	1
47		9.9922626		10.7201991		10.7279365	
48		9.9922385		10.7195122		10.7272737	
49	9.2733880	9.9922144		10.7188264		10.7266120	
50	9-2740487	9.9921902	19.2818585	10.7181415	10.0078098	10.7259513	14
51	9.2747082	9.9921660	9.2825422	10.7174577	10.0078240	10.7252917	
		7.9921418		10.7167749		10.7246331	
53	7-276024			10.7160930		10.7239755	
	9.2766811			10.7154122		10.7233189	
55	9-2773366	9.9920689	9.28 5267	10.7142323	10.0079311	10.7226634	13
56		9.9920445	-	10.7140534		10.7220089	-
		9.9920201		10.7133755	10.0079700	10.7213555	
58		9.9919956		10.7126986		10.7207030	
59		9.9919711	9.287977	3 10.7120227	10.0080289	10.7200516	
60		9.9919466	9.288652	3 10.7113477	10.0080534	10.7194012	1
-		Sine.		Tang.		Secant.	1

M	Sine		Tang.	11/42	Secant.		1
-	9.2805988	9.9919460	2.2886523	10.7113477	10.0080534	10.7194012	60
1	9.2812483	9.9919220	3.2892363	10.7106737	10.0380780	10.7187517	59
		9.9918974	9.2899993	10.7100007		10.7181033	
3	9.2825441	9.9918727		10.7093287		10.7174559	
		9.9918480		10.7086576		10.7168095	
-		9.9918233	-	10.7079874		10.7161641	-
		9-9917986		10.7073183	10 0082014	10.7155197	54
		9.9917737		10.7056500		10.7148763	
		9-9917489		10.7059828		10.7142339	
		9.9917240		10.7053164		10.7135924	
-		9.9916991		10 7046511	1	10.7129520	
11	2.2876875	9.9916741		10.7039865		10.7123125	
12	9.2883260	9.9916492		10.7033231		10.7116840	
13	9.2889636	9.9915241		10.7026605		10.7110364	
		9.9915990		10.7019989	10.0084010	10.7103999	13
-		9-9915739		10.7013382		10.7097643	
		9.9915488		10.7006784	10.0084512	10.7091296	4
		9.9915236		10.7000196	10.0084704	10.7084960	14
		9.9914584		10 6993617	10,0005010		4
		9.9914731		10.6987046	10.0005209	10.7072315	4
		9-9914478		10.6980486			-
1 2	9.2940291	9.9914225		10.6973934	10.0085775	10.7059709	3
22	9.2940580	9.9913717		10.6967391	10.0086283	10.7053420	3
		9.9913317		10.6960857	10.0086538	10.7047141	3
		9.9913462		10.6947817	10.0086793	10.7024510	
_					10.0087048		
7	0.2077882	9.9912952		10.6941311	10.0087304		
8	0-2084116	9.9912696		10.6028325		10.7015884	
		9.9912184		10.6921845	10.0087816		3
	9.2996553		9.3084626	10.6915374	10.0088073	10.7003447	3
-		Sine		Tang.		Secant.	N

M	Sine.		Tang.	1	Secant	4-17-1467	1
30	9-2990553	9.9911927	9.3084625	10,6915374	10.0088073	10.700344	30
31	9.3002758	9-9911670	9.3091088	10.0908912	10.0088330	10.6997242	. 9
32	9.3008953	9.9911412	9.3097551	10.6902459	10.0088 586	10.5991047	185
		9.9911154	9.3103985	10.5895015		10.5984850	
34	9.30213:7	9.9910896		10.5389579		10.697866	
35	9-3027485	9.5910537	9.3116848	10.6833152	10.00 9352	10.6972515	125
35	9.3033544	9.9910378	9-3123265	10.5876734	10.0089622	10.6956356	124
37	9.3039794	9.9910119	9.3129575	10.6870325	10.0039881	10.6950200	23
		9.9909359	9-3136076	10.5863924	10.0090141		
		9.9909598	9.3142458	10.6857532	10 0090402	10.6947934	21
40	9.3058189	9.9900338	9.3148851	10.6851149	10.0090662	10.6941811	20
41	9.3054303	9.9909077	9.3155226	10.6844774	10.0090923	10.6935607	119
		9.9908815		10.6838408	10.0091185	10.6920492	18
		9.9908553		10.6832050	10 0091447	10.6923497	17
44	5.3082590	9.9908291		10.5825701	10.0091709	10.6917410	16
45	9.3088668	9.9908029	9.3180640	10.6819360	10.0091971	10 6911222	15
16	9.3094737	9.9907766	9.3186972	10.6813028	10.0092234		
		9-907502		10.5806705	10.0092498		
		9-9907239		10.6800389	10.0092761		12
		9-9906974		10.6794032	10.0093026		11
		2.5906710	9.3212216	10.6787784	10.0093290		
51	9.3124951	2.9906445	9.3218506	10.6781494	10.0093555		5
		9.9905180	9.3224788	10.6775212	10.0093820	10.6860022	8
		9.9905914	9.3231061	10.6708939	10.0094036	10.6863024	7
		9.9905648	9.3237327	10.6762673	10.0054352	10.68 5702 5	6
55	9.3148955	9.9905332	9-3243584	10.6756416	10 00 94618	10.5851035	5
56	9-3154947	9.9905115	9-3249832	10.6750168	20,0094885		4
		9.9904848		10.6743927	10.0095152	10.6820070	3
		9.9904580	9.3252304		10.0095420	10.6822116	2
59	9.3172841	9.9904312	9 3268525		10.0095638	10,6827140	1
50	9.3178789	0.9904044	9-3274745	10.6725255	10.0095956		C
1	204	Sine.		Tang.		-	M

M	Sine.		Tang.		Secant.		-,0
0	9.3178789	9.9904044	9-3274745	10.6725255	10.0095956	10.6821211	60
1	9.3184728	9-9903775	9.3280953	10.6719047	10.0096225	10.6815272	59
2	9.3190659	9.9903506	9.3287153	10.6712847	10.0096494	10.6809341	58
	9.3196581		9-3293345	10.670665	10.0096763	10.6803419	57
4	9.3202495	9.9902967	9-3299521	10.6700472	10.0097033	10.6797505	50
_	9.3208400		9.3305704	10.669429		10.6791600	
	9-3214297		9.3311872	10.6688128	10.0097574	10.6785703	54
	9-3220186		9.3318031	10.6681969		10.6779814	
	9.3226066		9.3324183	10.6675816		10.6773934	
	9.3231938		9-3336463	10.6663537		10.6762198	
-	9.3237802						-
	9-3243657		9-3342591	10.6651286		10.6756343	
	9-3249505			10.6645177		10.5744656	
	9-3251174		0.2260027	10.6639073		10.6738826	
15	9.3266997	9.0800072	9.2267024	10.6632967		10.6733003	
-	9.3272811			10.6626887		10.6727189	-
	9.3278617		9-3379194			10.6721383	
	9-3284416		9.3385267	10.6614743	10.01008 42	10.6715584	42
	9.3290206		9.3391333	10.6608667		10.6709794	
20	9.3295988	9.9898597	9-3397391	10.6602609		10.6704012	
21	9.3301761	9-9898320	9.3403441	10.6596559	10.0101680	10.6598239	39
		9.9898043		the contract of the particular to the contract of the contract	10.0101957	10.6692473	38
	9.3313285		9.3415519		10,0102234	10.6686715	37
	9.3319035		9.3421546	10.6578454		10.6680965	
2	9-3324777	9.9897211	9.3427566			10.6675223	35
26	9.3330511	9.9896932	9-3433578	10.6566422		10.6669489	
	9.3336237		19.3439583	ACCURATE STREET, SALES OF THE AREA		10.6663763	
28	9-3341955	9.9896374	9-3445580			10.6658045	
25	9.3347665	9.9896095	9.3451570		10 0103905	10.6652335	31
30	9-3353368	9.989 5813	9.3457552	10.6542448	10.0104183	10.6646632	30
- 3		Sine.				Secant.	M

M	Sine.		Tang.		Secant		
- 1		9.9895815	9.3457552	10.6542448	10.0104185	10.6646632	30
-1	9.3359062			10.6536473		10,6640938	
31	9.3364749	9.9895254	9.3469494	10.6530506	10.0104746	10.6635251	28
	9.3370428	9.9894973	9.2475454	10.6524546	10.0105027	10.6629572	27
	9.3376099		9.3481407	10.6518593	10.0105308	10.6523901	26
35	9.3381762	9.9894410	9.3487352	10.6512648	10.0105590	10.6618274	25
	9.3387418		9.3493290	10.6506710	10.0105872	10.6612582	24
37	9.3393065	9.9892845	9.3499220	10.6500780		10.6606935	
28	0.3398706	9.9893562	9.3505143	10.6494857		10.6601294	
20	9.3404338	9.9893279	9.3511059	10.6488941		10.6595662	
40	9.3409963	9.9892995	9.3516968	10 6483032	10.0107004	10.6590037	20
	9-3415580		9.3522869	10.6477131	10.0107289	10.6584420	19
	9.3421190		9.3528763	10.6471237	10.0107573	10.6578810	18
		9.9892142	9.3534650	10.6465350	10 0107858	10.6573208	17
44	9.3432386	9.9891856	9.3540530	10.6459470	10.0108144		16
45	9-3437973	9.9891571	9.3546402	10.6453598	10.0108429	10.6562027	15
-		9.9891285	9.3552267	10.6447733	10.0108716	10.6556448	14
		9.9890998	9.3558126	10.6441874	10.0109002	10.6550876	13
		9.9890711	9-3563977	10.6436023		10.6545312	12
		9.9890434	9.3569821	10.6430179	10.0109576	10.6539755	11
50	9.3465794	9.9890139	9.3575658	10.6424342	10.0109863	10.6534206	10
-		9.9889849	9.3581487	10.6418513	10.0110151	10.6528664	9
		9.9889560		23.0	10.0110440	10.6523130	
		9.9889271	9.3593126	10.6406874		10.6517603	7
		9.9888982	9.3598935	10.6401065	THE RESIDENCE OF SECTION SHOWS AND ADDRESS.	10.6512083	6
		9.9888693	9.3604736	10.6395264	10 0111307	10.5506571	5
-		9.9888403	9-3610531	10.6389469	20.0111597	10.6501066	4
		9.9888113	9.3616319			10.6495568	
58	9.3509922	9.9887822			THE RESERVE OF THE PARTY OF THE	10.6490078	
59	9.3515405	9.9887531	9 3627874	10.5372126		10.6484595	
60	9.3520880	0.9887239	9.3633641	10.6366359	10.0112761	10.6479120	-
	1, 1,	Sine.		Tang		Secant.	M

M	Sine.	12	lang	-000	Secant.		1
10	9.3520820	9.9887239	9.3633541	10.6366355	10.0112761	10.0479120	60
1	9.3526349	9.5886847	9.3639401	10.636059	10.0:13055	10.0473651	59
2	9.3531810	9.9886655	9.3645155	10.635484	10.011334	10.6468190	58
2	0.3537264	9.988636		10.634909	10.011363	10.6462736	:57
4	9.3542710	9.9886070		10.6343355	10.0113930	10.6457290	
		9.9885776	9.3662374	10.6337620	10.0114224	10.6451850	100
6	9.3553582	9.9885482	9:3668100	10.6331900	10.01 14518	10.6446418	154
7	9.3555008	9.9885188	9.367381	10.6325181	10,0114812	10.6440993	52
8	9.3564426	9.9884894		10-6320468	10.0115100	10.6435574	52
9	9.3565836	9.9884599		10.631476:	10.9115401	106430164	51
10	9.3575240	9.9884303	9.3690937	10.630966	10.0115697	10.6424760	50
		9.9884008	9.3696625	10.6303371	10.0115992	10.6419363	49
		9.988 3712	9.3702315	10.6297685	10 01 16 288	10.6413973	48
		9.9883415		10.6292006	10.0116585	10.6408591	47
14	9-3596785	9.9883118	9.3713667	10.628633	10.0116882	10.6403215	46
15	9.3602154	9.9882821	9-3719333	10.6280567	10.0117179	10.6397846	
16	9.3607515	9.9882523	9.3724992	10.6275008	10.0117477	10.6392485	44
		9.9882225	19.3730645	10.6269355	10.0117775	10.6387130	42
		9.9881927	9.3736291	10.6263709	10.0118073	10.6381783	42
		9.9881628	9.3741930	10.6258070	10.0118372	10.6376442	41
20	9.3628892	0.9881329	9.3747563	10.6252437	10.0118671	10.6371108	40
		9.9881029	9.3753190	10.6246810	10.0118971	10.6355781	39
		9.9880729		10.6241190	10.0119271		38
		9.9880429		10.6235577	10.0119571	10.6355148	37
		9.9880128		10.6229970	10.0119872	10.6349842	36
25	9-3055458	9.9879827	9.3775631	10.6224369	10.0120173	10.6344542	35
26	9.36607.50	9.9879525	9.3781225	10.6218775	10.0120475	10.6339250	34
27	9.3666036	9.98792231	19.3786813	10.6213187	10.0120777	10.5633964	33
28	9.3671315	9.9878921	1. 31. 31.1	10.6207606	10.0121079	10.6628685	32
29	9.3676587	9.5878618		10.620 2031	10 0121382	10,6323413	31
30	9.3081853	9.9878315	9.3803537	10.6196463	10.0121685	10.6318147	30
1		Sine.	100			Secant.	M

M	Sine		Tang.		Secant.		1
30	9.3681853	9.9878315		10.6196463	10.0121685	10.6318147	3
31	9.3687111	9.9878012	9.3809100	10.5190900		10.6312889	
34	9.3692363	9.9877708	9.3814655	10.6185345		10.6307637	
33		9.9877404		10.6179795	10.0122596		
34		9.9877099		10.6174252		10.6297153	
35	9.3708075	9.9876794	9.3831285	10.6168715		10-6291921	-
30	9-3713304	2.9876488		10.6163184	10.0123512		
37	9-3718523	7.9876183		10.6157660	10,0123817		
38	9-3723735	9.9875876		10.6152142	10.0124124		
39	9.3728940	9.9875570		10.6146630	10.0124430	10.0271000	2
		9.9875263		10.6141124	10.0124737		-
1	9-3739331	9.9874955		10.6135624	10.0125045		
12	9.3744517	9.9874648		10.6130131	10.0125352		
13	9-3749696	9.9874339		10.6124644	10.0125661	SECURIOR SERVICE SERVI	
4	9-3754868	9.9874031		10.6119163	10.0125969		
15	9.3700034	9.9873722		10.6113688	10.0126278	_	-
	9.3765194			10.6108219	10.0126587		
17		9.9873103		10.6102756	10.0126897		
	9-377 5493			10.6097300	10.0127207		
	9.3780633			10.6091849	10.0127518		
0	9.3785767			10.6086405	10.0127829	A CONTRACTOR	100
I		9.9871860		10.6080966	10.0128140	Control of the Contro	
	9.3796015			10.6075534	10.0128451		L
3		9.9871236		10.6070107	10.0128764	The second secon	
- 7 /	9.3806237	9.9870924	9-3935313	10.6064687	10.0129076		
5	9.3811339			10.6059273	10.0129389		菱
6	9.3816434	9.9870298		10.6053864		10.6185366	4
7	9.3821523	9.9869984		10.6048462	10.0130016		3
8	9.3826605	9.9869670		10.6043065	10.0130330		1
9	9.3831682	9. 9809350	9.3902320	10.6037674	10.0130644		1
0	9.3836752	9.9809041	9.3907711	10.6032289	A DESCRIPTION OF THE PARTY OF T	10.6163248	-
		Sine.		Tang.		Secant.	M

76 Degrees.

Kkk

M	Sine		Tang.	A. Cal	Secant.		1
-c		9-9869041	The second second	10.5032289	10.0130959	10.6163248	60
E3300		9.9868726		10.5026911	10.0131274	10.6158185	39
		9.9858410	1. (1. def 1. 1)	10.6021537		10.6153127	
		9.9868094	9.39838;0	10. 016170		10.6148076	
		9.9867778		10.6010809		Market and Color of the Color o	
		9.9857451		10.6005453	10.0132535	10.6137992	\$5
192.005	Committee of the Commit	9.9867144	9.3999896	10.6000104	10 0132856	10.6132960	54
		5.2856827		10-5994760		10.6127933	
		9.9866509		10.5989422	10-0133491	10.6122913	52
		9.5856191		10.5984090		10.6117899	
		9-9865872	9.4021237	10.5978753	10.0134128	10.6112891	50
11	0.2802111	9.9865553	9.4026558	10 5973442	10.0134447	10.6107889	49
		9.985 5233		10.5968127		10.6102894	
	9.3902096		9.4037182	10.5962818	10.0135087	10,6097904	47
14	9.3007079	9.9864593	9-4042486	10.5957514	10,0135407	10.6092921	46
15	2.3912057	9-9864273	9.4047784	10 5952216	10.013.5727	10.6087943	45
No.	THE RESERVE AND ADDRESS OF THE PARTY.	9.9863952	9.4053076	10.5946924	10.0136048	10.6082972	44
		9.9863630		10.5941637		10.6078007	
		9.9863308		10.5936356		10.6073048	
		9.9862986	9.4068919	10.593 1081	10.0137014	10.6068095	41
		9.9862663	CONTRACTOR AND	10.5925811	10.0137337	10.6063148	40
222018		9.9862340		10.5920547	10.0137660	10.6058206	39
22	9.3946729	0.0862017		10.591 4288		10.6053271	38
		9.9861693		10.5910035	10.0138307	10.6048342	
				10.5904788	10.0138631	10.6043419	36
25	9.3961499	9.9861369	9.4100454	10.5899546		10.6038501	
Supress:		9.9860720	STREET, STREET	10.5894310	10.0139280	10.6033590	34
		9.9860394		10.5889079		10.6028685	
		9.9860069		10.5883854	1 1 1 2 20	10.6023785	
	9.3981109			10.5878634	10.0140258	10.6018891	31
30	9.3985996	9.9859416		10.5873419		10.6014004	
	k	Sine		Tang.	70115870	Secant.	M

M	Sine,		Tang		Secant.		Ī
30	100000000000000000000000000000000000000	9.9859416	9.4126581	10.5873419	10.0140584	10.6014004	130
31	19.3990070	9.9859089		10.5868211	10,0140911		
32	9.3995754	9.9858762	9.4136993	10.5863007	10.0141238	10.6004246	6 2
33	9-4000625	9.9858434	9.4142191	10.5857809	10.0141526	10.5999375	5 2
34	9-4005489	9.9858106		10.5852617	10.0141894	10.5994511	1 2
35	9.4010348	9.9857777		10.5847430	10.0142223		
25	9.401 5201	9.98 57449		10.5842248	10.0142551		
37	9.4020048	9.9857119		10.5837072	10.0142881	10.5979952	2 2 2
38	9.4024885	9.9856790		10.5831901	10.0143210		
39	9-4029734	9-9856460		10.5825735	10.0143540		
		9.9856129		10.5821575	10.0143871		2 (200
		9.9855798		10.5816420	10.0144202		
2	9.4044196	9.9855467		10.5811271	10.0144533		
3	9.4049009	9.9855135		10.5806126	10.0144865		
4.		9.9854803	9.4199013	10.5800987	10.0145197		
-	9.4058617			10.5705854	10.0145529		1000
		9.9854138		10.5790725	10.0145862		
		9.9853805			10.0146195		
	9-4072987		A STATE OF THE PARTY OF THE PAR	10.5780485	10.0146862	10.5927013	12
	9.4077766			10.5775372	10.0146862		
-		9.9852803		10.5770265	10.0147197		3
1		9.9852468	The second secon	10.5765162	10.0147532		
	7.4992068			10.5760065	10.0147867		
3		9.9851798		10.5754974	10.0148202		
~ 1	9.4101575	9.9851125		10.5744806	10.0148875		
5					and the second second second		1000
6	9-4111059	0.08-04-0		10.5739729	10.0149211	10.3088941	4
7	9.4115793	9.9850452	Control of the Contro	10.5734050	10.0149548	10.58704207	3
8	9.4120522	9.0840776	The second secon	10.5724532	10.0150224		
9	9.4125245	9.9849438		10.5719475	10.0150562	10.5870028	
	39, 3, 8,	Sine.		Tang.	11.2017	Secant.	M

1	Sine.	1	[ang	5	Secant.		100
•	9.4129952	9.9849438	9.4280525	10.5719475	10.0150562	10.5870038	60
	9.4134574		9.4285575	10.5714425		10.3865326	
2	9.4139381	9.9848760	9.4290621	10.5709375	10-0151240	10.5860619	50
2	9.4144082	9.9848420	9.4295661	10.5704335	10.0151580	10.5855918	57
4	0.4148778	9-9848081	9-4300657	10.5699303	10.0151915	10.5851222	54
	9.4153468	9.9847740	9-4305727	10.5654273	10.0152260	10.5846532	5:
	9.4158152		9.4310753	10.5089247	10.0152600	10.5841848	54
ì	9.4162832	9.9847059	9.4315773	10.5684227		10.5837168	
8	9.4167506	9.9846717	9.4320789			10.5832494	
	9.4172174	9.9846375	9-4325789			10.5827826	
10	9-4176837	9.9846033	9.4330804	10.5669196	10.0153967	10.5823163	5
	9.4181495		9.4335805	10.5664195	10.0154310	10.5818505	4
	9.4186148	9-9845347	9.4340800	10.5659200		10.5813852	
ì	9-4190795	9.9845004	9-4345791	10.5654209		10.5809205	
7	9.4195436	9.9844660	9.4350776	10.5649224		10.5804564	
3	9.4200073	9.9844316	9-4355757	10.5644243	10.0155684	10.5799927	4
	9.4204704		9 4360733	10.5639267	10.0156029	10.5795296	4
ĝ	9.4209330	9.9843626		10.5634296		10.5790670	
Ť	9.4213950	9.9843281	9.4370670	10.5629330	10.01 56719	10.5786050	4
Ú	9.4218566	9.9842935	9.4375631	10.5624309	10.0157065	10.5781434	4
Ž	9.4223176	9.9842589	9.438058	10.5619413	10.0157411	10.5776824	4
2	9.4227780	9.9842242	9.4384438	10.5614462	10.0157758	10.5772220	3
	29-4232380	9.9841895		10.5609515		10.5767620	
2	2 9.4236974	9.9841548	9.4395426	10.5604574		10.5763026	
2	4 9.4241563	9.9841200	9.440036	10.5599637	10.0158800	10.5758437	3
2	5 9-4246147	9.9840852	9.440529	10.5594705	10.0159148	10.5753853	3
	69.4250726		9.4410222	10.5589778	10.0159476	10.5749274	3
	79-4255299	19.9840154	9.441514	10.5584855	10.0159846	10.5744701	13
F	89-4259867	9.9839805		10.5579938	10.016019	10.5740132	3
į,	40.4264420	0.0829444	9.442497	5 10.5575025	10.016054	10.5735570	13
	09.4268981	9.9839105		3 10.5570117	10.0160896	10.5731012	3
30.00		Sine.				Secant.	

M	Sine.		Tang.		Secant		
30	9-4268988	9.9839105	9-4429883	10.5570117	10.0160895	10.573101	2 30
31	9.4273541	2.9838755	9-4434786		10.0161245	10.572645	29
	9.4278098		9-4439585		10.0161596	10.572191	1 28
33	9.4282631		9-4444579		10.0161948	10.5717369	27
34	9-4287169	9.9837701	9.4449468		10.0162299	10.571283	1 26
_	9-4291701		9-44 54352	7.000	10.0162652		
	9.4296228		9.4459232	10.5540768	10.0163004	10.570377	24
37	9.4300750	9.9836643	9-4464107	10.5535893	10.0163357	10.5699250	23
	9.4305267		9-4468978	10.5531022	10.0163710	10.5694733	22
	9.4309779		9.4473843	10.5526157	10.0164064	10.5690221	21
_	9.4314286		9-4478704	10.5521296	10.0164418		
	9-4318788		9.4483561	10.5516439	10.0164773	10.5681212	19
	9-4323285		9.4488413		10.0167128	10.5676714	18
	9-4327777		9.4493260		10.0165483	10.5672223	17
	9.4332264			10.5501898	10.0165839	10.5667736	16
	9-4336746		9-4502940	10.5497060	10.0166195	10.5663254	13
46	9.4341223			10.5492226	10.0166551	10.5658777	14
47	9-4345694			10.5487398	10.0158908	10.5654306	13
	9.4350161			10.5482573	10.0167265	10.5649839	12
	9-4354623		THE RESERVE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN THE PER	10.5477754	10.0167623	10.5645377	11
_	9.4359080			10.5472939	10.0167981		
	9-4363532			10.5468128	10.0168339	10.5636468	19
	9-4367980			10.5463322	10.0108698	10.5632020	8
	9-4372422			10.5458521	10.0169058	10.5627578	7
	9.4376859			10.5453724	10.0169417	10.5623141	6
-	9.4381292		9-4551069	10.5448931	10 0169777	10.5613708	5
56	9.4385719	9.9829862		10.5444143	10.0170138	10.5614281	4
	9.4390142			10.5439359	10.0170499	10.5609858	3
	9.4394560			10.5434580	10.0170860	10.5605445	2
59	9-4398973	9.9828778		10.5429806	10.0171222	10.5601027	1
20	9.4403381	0.9828418	9-4574964	10.5425036	10.0171586	10.5596615	0
	e post in the	Sine.		Tang.		Secapt.	M

M	Sine.	W W S	Tang:		Secant.		
0	9.4403381	9.9828416	9.4574964	10:5425036	10.0171584	10.5596619	60
	9-4407784	9.9828054	9-4579730	10.5420270		10.5592216	
2	0.4412182	9.9827691	9.4584491	10.5415509		10.5587818	
2	9.4416576	9-9827328		10.5410752		10.5583424	
4	9.4420955	9.9826904		10.5405999		10.5579035	
5	9-4425345	9.9826600	9.4598749	10.5401251	10.0173400	10.5574651	5
6	9.4429728	9.9826236	9.4603492	10.5396508	10.0173764	19.5570272	54
7	9.4434103	9.9825871		10.5391768	10.0174129	10.5565897	5
8	9.4438472	9.9825506		10-5387033		10.5561528	
	9.4442837	9.9825140	9.4617697			10.5557163	
10	9.4447197	9.9824774	9.4622423	10.5377577	10.0175226	10.5552803	50
		9.9824408	9.4627145	10.5372855	10.017559:	10.5548447	49
12	9.4455994	9.9824041	9.4631863	10.5368137	10 0175955	10.5544096	41
12	9.4460250	9.9823674		10.5363424	10.0176326	10.5539750	4
14	9.4464591	9.9823306		10.5358715	10.0176694	10.5535409	4
1	9.4468927	9.9822938	9.4645990	10.5354010	10.0177062	10.5531073	4
	9-4473259		9 46 50690	10.5349310	10.0177431	10.5526741	4
1	9.4477586	9.9822201	9.4655386	10.5344614		10.5522414	
18	9-4481909	9.9821831	9.4660078	10.5339922	10.0178169	10.5518091	4
I	9.4486227	9.9821462	19.4664765	10.5335235	10.0178538	10,5513773	4
20	9.4490540	9.9821092	9.4669448	10.5330552	10.0178908	10.5509460	4
2	9-4494849	9.9820721	9.4674127	10.5325873	10.0179279	10.5505151	3
H	0.4499152	9.9820351	9.4678802	10.5321198	10.0179649	10.5500847	3
2	29.4503452	9.9819579	9.4683473	10.5316527	10.0180021	10.5496548	3
2	4 9.4507749	9.9819608		10.5311861	10.0180392	10.5492253	3
2	9.4512037	9.9819236	9.4692801	10.5307199	10.0180764	10.5487963	3
	60.4516222	0.9818863	9.4697455	10.5302541	10.0181127	10.5483678	3
	10.4520602	9.9818490	9.4702112	10.5297888	10.0181510	10.5479397	3
2	8 9.4524879	9.9818117	9-4706762	10.5293238	10.0181883	10.5475121	3
	0 9.4529151	19.9817744	9-4711407	10.5288593	10.0182256	10.5470840	13
2	9-4533418	9.9817370	9-4716048	10.5283952	10,0182630	10.5466582	3
2	127 ×30	Sine.	W 1971			0	N

1	Sine.	Tang.		Secant		11
56	9.4533418 9.981737	0 9.4716048	10.5283952	10.0182630	10.5465582	35
	9.4537081 9.981699		10-5279315	10.0183005	1015462315	25
1	9.4541939 9.981662		10.5274682	10.0183380		28
2	9.4546192 9.981624	5 9.4729947	10.5270053	10.0183755		
d	9.455044 19.981587	0 19.4734571	10.5265428	10.0184130		2
5	9.4554686 9.981549	4 9.4739192	10.5262808	10.0184505		2
5	9.4558926 9.981511	7 9.4743808	10.5255192	10.0184883	10.5441074	2
7	9.45631619.981474	0 9.4748421	10.5251579	10.0185260		
8	9.4567392 9.981436	3 9.4753029		10.018563.7		
0	9-4571618 9-981398	6 9.4757633	10.5242367	10:0186014		
0	9.4575840 9.981360	8 9-4762233	10.5237767	10.0186392		500
	9.4580058 9.984 322		10.5233171	10.0186771		
2	9.4584271 9.981285	0 9.4771421	10.5228579	10.0187150		
3	9.4588480 9.981247	1 9.4776009	10.5223991	10 0187529		
4	9.4592684 9.981209	1 9-4780592	10.5219408	10.0187909		1
5	9.4596884 9.981171	9.4685172	10.5214828	10.0188289	The second second	-
6	9.4601079.9.981133	1 9.4789748	10.5210251	10:0188669		L
7	9.4605270 9.981099	0 9-4794319		10.0189050		
8	9.4609456 9.981056	9 9.4798887	10.5201113	10.0189431		1
9	9.4613638 9.981018	7 9.4803451	10.5196549		10.5386362	
0	9.4617816 9.980980	9.4808011	10.5191989		10.5382184	15
	9.4621989 9.980942		10.5187434		10.5378011	1
2	9.4626158 9.980904	0 9.4817118	10.5182882	The state of the s	10.5373842	
3	9.4630323 9.98086		10.5178334		10.5369677	
4	9.4634483 9.98082	3 9.4826210	10.5173790		10.5365517	
_	9.4638639 9.980788		10.5169250		-	
6	19.4642790 9.980750		10.5164714	20.0192495	10.5357210	1
7	9.4646938 9.980713		10.5160182		10.5353062	
8	9.4651081 9.98067		10.5155654		10.5348919	
9	9.4655219 9.980634		10.5151130	A STATE OF THE PARTY OF THE PAR	10.5344781	
0	9.4659353 0.98059	9.4053390	10.5146610	20.0194034	10.5340647	-
1	Sine	1 1 1 1 1 1 1 1 1	Tang.	11/1/2019	Secant.	1

M	Sine		Tang.		Secanti		
0	2.465935	9.9805963	9.4853390	10.5146610	10.0194037	10.5340647	60
		9.9805577		10.5142093			59
		9.9805190		10.5137581	10,0194810		100
		9.9804803		10.5133072		10.5328270	
		9.9804415		10.5128567		10.5324152	
SHORTEN.		9.9804027		10.5124067		10.5320040	
		9.9803639		10.5119570		10.5315931	
		9.9803250		10.5115076		10.5311827	
		9.9802860		10.5110587		10.5307727	
		9.9802471		10.5106102		10.5303631	51
Sittement		9-9802081		10.5101620			
		9.9801690		10.5097142	10.0198310	10.5295452	49
		9.9801299	9.4907332	10,5092668		10.5291369	
		9.9800908	9.4911802	10.5088198		10.5287290	
		9.9800516		10.5083731		10.5283215	
BOY!		9.9800124		10 5079269			100
9	9.4724922	9-9799732		10.5074810		10.5275078	
		9-9799339		10.5070354		10.5271015	
		9.9798946		10.5065903		10.5266957	
		9.9798552		10.5061455		10.5262703	40
1000		9-9798158		10.5057012		10.5258844	11
		9.9797764		10.5052571		10.5254808	
		9.9797369	9.4951865	10.5048135		10.5250766	
		9-9796973		10-5043702			
		9.9796578		10-5039273		10.5242696	
	9.4701334	9-9796182	9-4905152	10-5034848		10.5238666	
		9.9795785		10.5030426	10.0204215		34
		9.9795388		10.5026009		10-5230620	33
28	9.4773396	9.9794991		10.5021594	10.0205009		32
19	9-4777409	9-9794593		10.5017184	10.0205407		31
50	9.4781418	9-9794195	9-4987223	10.5012777	10 0205805	10.5218582	30
		Sine		Tang.		Secant.	M

1	Sine.		Tang		Secant	W 5-	
0	9.4781418	9.9794195	9-4987223	10.5012777	10.0205805	10.5218582	3
	9.4785423	9.9793796	9-4991626	10.5008374	10.0206204	10.5214577	2
		9.9793398		10.5003974		10-5210577	
		9-9792998	9.5000422	10.4999578		10.5206580	
	9-4797412	9-9792599	the state of the s	10.4995186	the second secon	10.5202588	
	9.4801401	9.9792198	9.5009203	10.4990997	10.0207802	10.5198599	2
	2.4805385	2-9791798	9.5013588	10.4986412		10.5194615	
1		7.9791397	9.5017969	10.4982031		10.5190634	
	9.481334-	7.9790996		10.4977653		10.5186658	
Ç.		9-9790594		10.4973275		10-5182685	
0	9.4821283	9.9790192	9-5031092	10.4968908		10.5178717	-
1		9.9789789		10.4964541	A COLUMN THE CONTRACTOR OF THE PARTY OF THE	10.5174752	
2	9.4829208	9.9789388		10.4960178	The state of the s	10.5170792	
3	9-4833165	9.9788983		10.4955818	The state of the s	10.5166835	
ì	9.4837117	9.9788579		10.4951462		10.5162883	
5		9.9788175	9-5052891	10.4947109		10.5158934	۰
6	9.4845010	9.9787770		10.4942760		10.5154990	
7	9.4848951	9-9787365		10.4938414	PERSONAL PROPERTY OF THE PROPERTY OF THE PERSONAL PROPERTY OF THE PERSO	10.5151049	
8	9.4852888	9.9786960		10.4934072		10.5147112	4
		9.9786554		10.4929733		10.5143180	
0		9.9786148		10.4925398			-
I		9-9785741		10.4921067		10,5135326	
2	9.4868595	9-9785334		10.4916735	POR A CONTRACT OF THE CONTRACT	10.5131405	
3	9.4872512	9-9784927		10.4912414		10.5123574	
4	9.4070420	9.9784519		10.4908093		10.5119665	
-							٠.
6		9.9783702		10.4899461		10.5111858	
7		9.9783293		10.4895151		10.5107960	
0	0.45.4602	9.9782883		10.4885540		10.5104066	
50	9-489082	9.9782063	9.511776	10.4882240		10.5100176	
_	4-77	Sine.	1	Tang.		iecant.	1

A Table of Artificial Sines,

18 Degrees.

M	Sine		Tang.		Secant.		1-
-	2.4899824	9.9782062	9.5117760	10.4882240	10.021793	10.5100176	50
1	9.4903710	9.9781653	9:5122057	10.4877943	10.0218347	10.5096290	55
	9.4907592			10.4873549		10.5002408	
		9.9780830		10.4869359		10.5088525	
		9.9780418		10.4865073		10.5084655	
5	9.4919216	9.5780006	9.5139210	10.4860790	10.0219994	10.5080784	10
,6	9.4923083	5-2779593		10.4856510		10.5076917	54
		9-9779180		10.4852234		10.5073054	
		9.9778766		10.4847961		10.5069194	40.0
9	9.4934561	9.9778353		10.4843691		10.5065339	
10	6.4638613	y-9777938		10.4839425		10.5061487	14.
		9.9777523		10.4835162		10.5057639	
		9-9777 108		10.4930903		10.5053795	
		9-9776693		10.4826647		10.5049954	
	9.4953883			10.4822394		10.5046117	
THE R.	-	9-9775860		10 4818145		10.5042284	
10	9.4961545	9-9775444	Company of the Compan	10.4813899		10.5038455	44
	9.4965370			10.4809556		10.5034630	
10	9.4909192	9.9774609		10.4805417		10.5030808	1.
	9-4973010			10.4796948		10.5026990	4
MATERIAL PROPERTY.	9-4976824						39
	9.4980635	9-9773354		10.4792718	10.0220040	10.5019365	3
	9.4984442	9.9772934		10.4788492	10.0227085	10.5015558	3
	9.4988245 9.4992045			10.4784270	10.0227905		30
	9.4995840		9.5224166			10.5004160	
4.7	CONTRACTOR OF THE PARTY OF THE	Charles and Control of the Control o				-	34
	9-4999633		9.5228379		10.0229168	10.5000367	3
	9.5003421		9.5236795		10.0229590		3
	9.3010987		9.5240999		10.0230012		3
	9.5014764		9-5245199			10.4985236	
		Sine		Tang.	141,96	Secant.	N

M	Sine.		Tang.		Secant.		
0	9.5014764	9 - 9769566	9-5245199	10.4754801	10-0230434	10-4989236	30
ī	9.5018538	9.9769143	9.5249395	10.4750605	10.0230853	10.4981462	2
2	9.5022308	9.9758720		10.4746411	10.0231280	10-4977692	2
2	9.5026075	9.9768295	9-5257779	10-4742221	10.0231704	10-4973925	2
4	9.5029838	9-9767872		10.4738034		10.4970162	
•	9.5033598	9.9767447	9.5206150	10.4733850	10.0232553	10-4966403	2
6	9.5037353	9-9767022		10.4729667	10.0232978	10.4962647	2
7	9.5041105	9.9766597	9.5274508	10.4725492	10.0233403	10.4958895	2
8	9.5044853	9.9766171	9.5278682	10.4721318		10.4955147	
ć	9.5048598	9-9765745	9-5282853	10.4717147		10-4951402	
		9.9765318		10.4712979	10.0234682	10.4947661	2
1	9.5056077	9-9764891	9.5291186	10.4708814		10.4943923	
2	9.5059811	9-9764464	9-5295347	10.4704653		10-4940189	
2	9.5063542	9.9704036	9.5299505	10.4700495		10.4936458	
-	The second of th	9.9763608	9.5303601	10.4696339		10-4932731	
5	9.5070992	9-9703179		10.4692187	10.0230821	10.4929008	
		9-9762750		10.4688039		10.4925288	
	9.5078428		9.5316107	10.4683893		10.4921572	
8	9.5082141	9.9761891	9-5320250	10.4679750	10.0238109	10.4917859	1
9	9.5085850	9.9701401	9.5324309	10.4675611	10.0238539	10.4914150	1
_		9-9761030	THE RESIDENCE OF THE PARTY OF	10.4671474	The same and section in the last	10.4910444	-
Ļ	9.5093258	9-9760599		10.4667341		10.4906742	
2	9.5090956	3.9760167		10.4663211	10.0239833	10.4903044	H
		7.9759736		10.4659084	10.0240204	10.4899349	1
4	9.5104343	9.9759303		10.4654960		10.4895657	
-		9.9758870	A RECOGNISION OF THE PARTY OF T		1	10.4891969	400
	9.5111716			10.4646722	10.0241503	10.4888284	1
		9.9758004	9-5357393	10.4642607	10.0241990	10.4884603	3
	The company of the contract of	9.9757570		10-4638495	10.0242430	10-4880926	1
7	0.5126410	9-9757135		10.4630281	10.0242300	10.4877251	
-	7 3.204.7	Sine.	1	Tang.	3-37	Secant.	E

1	Sine.		l'ang.		Secant.		1
933	9-51 26415	9.9756791	9.5359715	10.4630.81	10.0243:99	10.4873581	60
	9.5130086		9.5373821	10.4626179	10.024373	10.4869914	59
	9.5133750	2.9755830	9.5377920	10.4622080	10-0244170	10.4866250	58
2	9.5137410	9-9755394	9.5382017	10.4617983	40.0244500	10.4862550	57
4	9.5141067	9-9754957	2.5386110	10.4613809	10.0245403	10.4858933	50
3	9.4144721	9-9754521	9.5390260	10.4609800	10.0245475	10.4855279	5
	9.5148371		9-5394287	10.4605713	10.0245917	10.4851629	54
7	0. 4143017	9.9753646	9.5398371	10.4601629	10.0246354	10.4847983	5
8	0.5155060	9.9753208	9-5402453	10-4597547	10-0246792	10-4844340	5
0	9.5159300	2-9752769	9.5406534	10.4593469		10.4840700	
10	9.5162936	9.9752330	9-5410605	10.4589394	10.0247676	10.4837064	50
		9.9751891	9.5414678	10.4585322	10.0248105	10.4833431	4
		9-9751451	9.3418747	10.4581253	10.0248545	10.4829802	4
		9.9751011	9.5422813	10.4577187	10.0248985	10.4826176	4
14	9-5177447	9.9750570	9.5426877	10.4573123	100249430	40.4822553	4
	9.5181066	9.9750129	9-5430937	10.4569063	10.024.0871	10.4818934	4
		9-9749688	9-5434994	10.4565006	10.0250312	10.4815318	4
	0.518820	9.9749246	9.543904	10.4560552		10.4811705	
ł	10.4101904	9-9748804	9.5448100	10.4556900		10.4808096	
Π	9.519551	9-9748361	9.544714	10.4552852	10.0251639	10.4804490	4
3	9.519911	9-9747918	9-545119	10.4548807	10.0252082	10.4800888	4
		9-9747475		10.4544764	10.025252	10.4797289	3
	0.520630	9-9747031	9-54-5927	6 10.4540724		10.4793693	
2	29.520989	99.9746587	9.546331	10.4536688	10.025341	10.4790101	3
2	19.521348	8 9.9746142	9-546734	6 10.4532054	10.025385	10.4786512	3
2	\$9.521707	4 9.9745697	9-547137	7 10.4528623	10.025430	3 10.4782926	3
		6 9.9745252	5-547 540	10.4524595	10.024474	8 10-4779344	2
10	70.522422	5,9.9744866		C 10.4520570		4 10-4775765	
15	8 9.522781	1 9-9744359		: 10.4516548	10.025564	1 10.4772189	1
1.	0 9. 523138	3 9-5743913	9.548747	1 10.4512529	10 025608	7 10.4768617	13
1	0 9-523499	39-9742466	9-549148	7 10.4508513	10.025653	4 10.4765047	,
F		Sine.				Secant.	

M	Sine.	1	Tang.		Secant	3.4	1
30	14 17	9-9743456	2.5491485	10-4508513	10.0255534	10.476504	30
	9.52385.8		9-5495500	10-4504500		10.476148:	
		9-9742570	9.5499511	10 4500489	10.0257430	10.4757915	28
		9-9742122	9-5503515	10.4496481		10.475436	
		9-9741264	2.5507523	10.4492477	10.0258327	10.4750804	126
35	9-5252749	9-974 224	9.551 1525	10-4488475	10.0258776	10.4747251	2.5
35	9.5256298	9-9740774	9.5515524	10.4484476		10-4743702	
37	9.5259844	9-9740324	7.551952	10.4480479		10-4740156	
	9-5263387			10-4476486		10.4735613	
		9-9739422	9.5517504	10.4472496	10.0250578	10-4733073	3
40	9.5270463	9-9738971	9-5531492	10 4468508	10.0201029	10.4729537	26
41	9-5273997	9.9738519	9.5535477	10-4454523		10.4726003	
	9-5277526		9.5539459		10.0201933	10.4722474	
		9.9737615	9.5543438	10.4456562	10 0262385	10.4718947	
		9-9737162		10.4492585	10.0262838		
44	9.5288097	9.97 36709	9-5551388	10 4448612	-	10.4711903	Sec.
16	9.5291614	9.9735255	9-5555359	10.444641		10.4708380	
		9.9735301	9-5559327	10.4440673	10.0254199	10.4704872	
-		9-9735346		10-4436708	10.0264654		
		9-9734891		10-4432745	10.0265109		
50	9.5305050	9.9734435	9-5571214	10.4428786	-	10.4694350	No.
		9-9733980		10.4424829	10.0266020	10.4690849	5
		7-9733523		10-4420875	10.0266477	10.4687351	. 8
		9.9733067		10-4416923	10.0266933	10-4683857	5
		9.9732510		10 4412975	10.0267390		
55	9.5323123	9.9732152	9-5590971	10-4409029	10 0267848		
		9.9731694		10.4405086	10.0268306	10.4673392	
		9.9731236		10.1401146	10.0268764	10.4689910	
		9-9730777		10.4397608	10.0269223	10-4566431	
		9.9730318		10.4393273	10.0209682	10.4662956	E.
90	9-5340517	0.9729858	9.5010659	10.4389029	10.0270142	10.4659483	1
		Sine.	4 4	Tang.	7 4 4	Secant.	M

M	Sine.		Tang		Secant.		
-	0.5240517	9.9729858	9.561055	10.4389341	10. 9270142	10.4659483	60
	9.5343986		9.5614588	10.4385412	10.0270602	10.4656014	59
	2.5347452	9.9728938	9.5618515	10.4381485	10-02 71062		58
2	9.5350915	19-9728477		10.4377561		10.4649085	
4	9.5354375	9.9722010		10.4373540		10.4645625	
3	9-5357832	9.9727554	9.5630278	10.4369722	10.0272446	10.4642168	55
6	9.5261286	9.9727092	9.5634194	10.4365800	10.0272900	10.4638714	54
	9.5364737	9.9726629		10.4361893		10.4635263	
8	9.5368184	9.9726166		10-4357982		10.4631816	
	9.5371328	9-9725703		10.4354075		10 4628372	
10	9.5375070	9.9725239	9.5649831	10.4350165	10.0274761	10.4624930	50
1	9.5578508	9.9724775	9.5653733	10.434626		10.4621492	
		9.9724310		10.4342367		10.4618057	
1:	9-538537	9.9723845		10.4338470	10.0276155	10.4614625	47
14	9.5388804	9.9723380	9.5665424		10.0276620	10.4611196	46
1	9.5392230	9.9722914	9.5669316	10.4330684	10.0277086	10.4607770	45
1	THE RESERVE THE PERSON NAMED IN	9.9722448	9.567320	10.4325795	10.0277552	10.4604347	44
		9.9721981		10.4322909	10.0278019	10.4600927	43
1	0-440248	9.9721514	9.568097	10.4319025	10.0278486	10.4597511	42
1	9.540590	9-9721047		10.4315144	10.0278953	10.4594097	41
12	9.540931	9.9720579	9.568873	10.4311265	10.0279421	10.4590686	40
100		9-9720110	9.5692611	10.4307389	10.3279890	10 4587279	35
1.	9-541612	6 9.9719642	9.569648	10.4303516	10.0280358	10.4582874	1 28
12	29.541952	9.9719172	9.570035	10.4299645	10.0280828	10.4580473	13
12	4 9.542292	6 9.9718703	9.570422	10.4295777	10.0281297	10-4577074	120
12	9.542632	1 9.9718233	9.570808	10.4291912	10.0281767	10.4573679	3
ALC: UK		3 9-9717762	9.471194	10.4288049		10.4570287	
Ľ	-0.642210	3 0.9717291		1 10.4284189	10.0282709	10-4566897	13
1	2 9-442648	9 9.9716820		10.4280331	10.0283186	10.4562511	13
1	0 9.543987	3 9.97 16348		4 10-4276476	10-0283652	10-4560127	73
12	0 94544325	3 9.97 1 5876		7 10-4272623	10.0284124	10.455674	7 3
ľ	The second	Sine.	3		The Wa	Secant.	

M	Sine.		Tang.		Secant		1
30	9-5443253	9-9715070	9.572737	10. 1272623	10.0:81124	10.455574	3
_		-9715405	9.5731227	10.4208773	10,0284596	10.4353370	2
550,100,01	AND THE RESERVE OF THE PARTY OF	9.9714931	9-5735074	10 426 1926	10.0285059		
		9.9714457	9.5738915	10.4251081	10.0285543	10,4545624	2
		9-9713984	9 5742761	10.4257239	10.0285016	10.4543255	3
3.5	9.5460110	9.9713509	9.5746601	10.4253399	10.0286491	10.4539890	1
35	9.5463172	9.9713035	9.5750438	10.4249562	10.0286965	10.4536528	2
		9.9712550	9-5754292	10.4245728	10.0287440	10.4533168	2
		9.9712084	9.5758104	10.4241856	10.0287916		
		9.9711608	9,5761934	10.4238066	10 0288392		
40	9-5476893	9-9711132	9-5765761	10 4234239	10.0288868	10.4523107	20
41	9.5480240	9.9710655	9 5769585	10-4230415	10.0289345	10.45 19760	1
12	9.5483585	9.9710178	9.5773407	10.4226593	10.0289822		
13	9.5480929	9.9709701	9.5777226	10.4222774	10 0290299		
		9.9709223	9.5781043	10.4218957	10.0290777		
15	9-5493602	9.9708744	9.5784858	10.4215142	10.0291256	10.4506398	1
16	9.5496935	9.9708265	9.5788669	10.4211331	10.0291725	10.4503065	14
17	9-5500265	9.9707786	9-5792479	10.4207521	10.0292214	10.4499735	1
		9.9707306	9-5796286	10.4203714	10.0292694	10.4496408	1:
		9.9706826		10.4199910	10.0293174		1
0	9.5510237	9.9706346	9.5803892	10.4196108	10.0293654	10.4489763	K
1	9.5513556	9.9705865	9-5807691	10.4192309	10.0294135	10-4486444	9
		9.9705383	9-5811488	10.4188512	10.0294617		
3	9.5520184	9-9704902	9.5815282	10.4184718	10.0295098	10.4479816	
		9-9704419		10.4180926	10.0295581	10-4476506	1
5	9.5526801	9-9703937	9.5822864	10.4177136	10 0296063	10.4473199	
6	9.5530105	9-9703454	9.5826651	10.4173349	10.0296546	10.4469805	
	Committee of the Commit	9.9702970	The state of the state of the state of	10.4169565	10.0297030		
		9-9702486	Market Street Street Street Street	DOT THE COUNTY OF COUNTY AND ADDRESS.	10.0297584	10.4463296	1
		9.9702002		10.4162003	10.0297998	10.4460001	
00	9-5543292	0.9701517	9.5841774	10.4158226	10.0298483	10.4456708	1
1		Sine.		Tang		CATANDRIAN AND A	M

V.	Sine		Tang.		Secant.		1
c		9.9701517	9.5841774	10.4158226	10.029848.	10.4456708	60
100	1	9.9701032	9.5845549	10.4154451	10.0298968	10.4453419	55
	9.5549868			10.4150679		10-4450132	
	9.5553152			10.4145909		10.4446848	
		9.9699574	9.5855859	10.4143141	10.0300426	10.4443567	5
	9.5559711		9.5850624	10-4139376	10.0300913	10.4440289	5
6	9.5562987	9.9698600	9.5864386	10.4135614	10.0301400	10.4437013	5
	9.5566259			10.4131853	10.0301888	10.4433741	15
8		9.9697624		10:4128096	10-0302376	10.4430471	5
9	9-35-2796	9.9697136	9.5875660	10.4124340	10.0302864	10.4427204	15
0	9.5576060	9.9696647	9.58794.13	10.4120587	10.0303353	10.4423940	15
1	9-5579321	9.66961 48	9.5883163	10.4116837	10.0303842	10.4420679	4
		9.5695668		10.4113088		10.4417421	
3	9 5585835	9.9695177	9.5890657	10.4109343	10.0304823	10.4414165	4
		9.9694687	9-5894401	10 4103599	10,0305313	10-4410912	4
	9.5592338		9.5898142	10 4101858	10.0305804	10.4407662	4
6	0.4404584	9-9693704	9-5901881	10.4098119	10.0306296	10.4404415	4
7	9.5598829	9.9693212	9-5905617	10.4094383	10.0306788	10.4401171	4
		9.9692720	9.5909351	10.4090649	10.0307280	10.4397929	4
9	9.5605310	9.9692227	9.5913082	10.4086918		10.4394650	4
	9.5608546		9.5916812	10.4083188	10.0308266	10.4391454	4
1	9.5611770	9.5691240	9.5920539	10.4079461	10.0308759	10.4388221	3
2	9.5615010	9.9690746		10.4075737	10.0309254	10.4384990	3
3	9.5618237	9.9690252		10.4072015	10.0309748	10.4381763	3
4	9.5621462	9.9689757		10.4068295		10.4378538	
5	9.5624685	9.9689262	9-5935423	10-4064577	10.0310738	10.4375315	3
5	9.5627904	9.9688765	9.5939138	10.4060862	10.0311234	10.4372096	3
	9.5631121		9.5942851	10.4057149	10.0311730	10.4368879	3
	9.5634335		9.5946561	10.4053439		10.4365665	
	9.5637546			10.4049731		10.4362454	
0	9.5640754	9.9686779	9-5953975	10.4046025	10 0313221	10.4359246	3
1	1.25	Sine	1. 1. 1. 1. 1. 1.	Tang.		Secant.	N

M	Sine.	《成集》	Tang.		Secant		1
30	9.5540754	9.9686979	9-5953975	10.4046025	10.0313221	10.435924	30
		9.9686281	9-5957679	10.4042321		10.4356040	29
32	9.5647162	9.9685783	9.5961380	10.4038620	10.0314217		28
33	9.5650363	9.968 5284	9.5965079	10.4034921	10.0314710		27
34	9.5653561	9.9684785	9.5968776	10.4031224	10.0315215		16
35	9.5656756	9.9684286	9-5972470	10.4027530	10.03 15714	10.4343244	1-5
_		9.9683786	9.5976162	10.4023838	10.0310214	10.4340053	24
		9.9683285	9.5979852		10.0316715	10.433686;	23
		9.9682784	9-5983540		10.0317216	10.4333676	22
		9.9682283	9.5587225		10.0317717		
40	9.5672689	9.9681781	9.5990908	10 4009092	10.0318219	10.4327311	20
41	9-5675868	9.9681279	9.5994588	10.4005412	10.0318721	10.4324132	19
		9.9680777	9-5998267		10.0319223		
		9.9680274	9.6001943		10.0319726	10.4317783	17
		9-9679771	9.6005617	10.3954383	10.0320229	10.4314613	16
		9.9679267	9.6009289	10.2090711	10.0320733	10.4311445	15
46	9. 5691721	9.9678763	9.6012958	10.3987042	10.0321237	10.4308279	
		9.9678258		10.3983375	10.0321742		13
		9.9677753		10.3979710	10.0322247	10.4301957	12
		9-9677247		10.3976047	10.0322753	10.4298800	叫
50	9.5704355	9.9676741	9.6027613	10.3972387	10.0323259	10.4295645	10
51	0.5707505	9.9676235	9.6031271	10.3968729	10.0323765	10.4292494	9
		9.9675728		10.3965073	10.0324272		8
		9.9675221		10.3961419	10.0324779	A DOTT THE STREET WHEN THE STREET	.7
54	9.5716946	9.9674713	9.6042233	10.3957767	10.0325287	10.4283054	6
55	9-5720087	9.9674205	9.6045882	10.3954118	10.0325795	10.4279913	5
56	9-572 3226	9.9673698	9.6049520	10.3950471	10.0326303	10-4276774	4
		9.9673188		10.3946826	10.0326812	10.4273638	3
		9.9672679		10.3943183	10.0327321		2
		9.9672169	9.6060457	10.3939543	10.0327831	10.4267374	
60	9-5735754	9671659	9.6 064096	10.3935904	10.0328341	10-4264246	0
		Sine.		Tang.	18	Secant.	M

68 Degrees.

Mmm

M	Sine		Tang.		Secant.	110	
		9:9671659	9.6054096	10.3935904	10.0328341	10.4264246	60
	2.73886	9.9671143	-	10.39,2268	10.0328852	10.4261120	59
2	2-1742002	9.9670637	0.6071366	10.3928634	10.0329363	10.4257997	58
2	0.6744127	9.9670125		10 3925003		10.4254877	
4	0.5748240	9.9669614	9.6078627	10.3921373		10.4251760	
5	0.5751356	9.9659101	9.6032254	10-2917743	10.0330899	10.4248644	55
		9.9058588	0.6085880	10.3914120		10.4245532	
7	0.575757	8 9.9668075	9.608950	3 10.3910497		10.4242422	
8	0.57:058	5 9.9567562		10.3906876		10.4239315	
	0.576379	09:9667048	9.609674	2 10.3903258		10.4236210	
10	9.576589	2 9.9665533	9.610035	9 10.3899641	10.0333407	10.4233108	50
SALES	AND DESCRIPTION OF THE PARTY OF	9.9665015		3 10 3896027		10.4230009	
1	0.477308	8 9.9665503	9.610758	6 10.3892414		710.4226912	
L	0.577618	2.9664986	9 611119	6,10.3888804		3 10.4223817	
1	0.577927	1.9664471		4 10. 3885 196		10.422072	
1	10.478236	4 2.9663954	9.611840	9 10 3881591	10.0336040	10.421763	54
		7.9663437		3 10.3377987		3 10.4214550	
E	0.678852	3 9.9662920		5 10.3874385	10.033708	0 10.421146	5 4
1	10,570161	7.9662402		410.3870786		8 10.420838	4 4
10	00-479469	5 9.9661884	4 9.613281	2 10.3867188	10.033811	6 10.420530	
2	09.579777	2 9.966136		7 10.3863593		5 10-420222	8 4
		5 9.966084		010.3860000	The second secon	4 10.419915	5 3
2	20.580201	7 9.966032		1 10.38 56 409	The state of the s	4 10.419608	
2	20.080698	6 9.96 5980		30 10.3852820		4 10.419301	4 3
2	40.581005	2 3.965928		6 10.3849234	10.034071	5 10.418994	
		6 9.965876		1 10.3845649		6 10.418688	4
-		9-965824		1 10.3342066		7 10.418382	3
		6 9-965772		4 10.3838480		9 10.418076	9
		2 9.963719		3 10.3834907	the state of the s	1 10.419790	
12	00.582534	5 9.965667		59 10.3831331		3 10.417465	
1	00,482839	7 9-965615		12 10.3827757		710.417160	3
-	1	Sine		Tang.		Secant.	-1

Tangents and Secants.

22 Degrees.

M	Sine.		Tang.		Secant		
30	9.5828397	9.9656153		10.3827757	-	10.4171.60;	
31	9.5831445	9.9655630	9.6175815	10.3824185		10.4168555	
	9.5834491	9.9655106	9.6179385	10.3820615		10.4165505	
53		9.9654582		10.3817047	10.0345418		
	9.5840576			10.3813481			
-	9.5843615			10.3809917	Market Street Committee of the Committee	10.4156385	-
	9.5845651			10.3806355		10.4153345	
	9.5849686			10.3802795		10.4150315	
		9.9651953		10.3799238		10.4147284	
	9.5855745			10.3795682		10.4141255	
-	9.5858771			10.3792128		10.4141229	1000
	9.5861795			10.3788577		10.4138205	
	9.5864816			10.3785026	10.0350157	10.4135184	10
	9.5867835			1013781480	10 0350000	10.4132165	12
14	9.5873865	9.0648246		10.3777934	10.0351215		
_					The state of the s	SHEEDS AND DESCRIPTION OF THE PARTY OF THE P	F 100
	9.5876876			10.3770850	10.0352274		
	9.5882892			10.3767310	10.0352805		
	9.5885896			10.3760237	10.035386		
	9.5888397			10-3756704	10.0354398		
-	9.5891897			10.3753173	10.0354931		9
	9.5894803		A STREET, THE PERSON OF THE PE	10.3749644	10.0355463	CALL SECTION OF SECTION SECTIO	8
	9.5897888			10.2746116	10.0355996		7
	9.5900880		A COLUMN TO THE PARTY OF THE PA	10.3742591	10.0356530		6
	9.5903869			10.3739068	10 0357063		5
_	9-5906856		9.6264454	10.3735546	10.0357598		·A
	9.5909841			10.3732027	10.0358132		3
8	9.5912823	9.9641332		10.3728509	10.0358668	10.4087177	2
9	9.5915803	9.9640797	9 627 5000	10-3724994	10.0359203		1
0	9-5918780	0.9640261		10.3721481	10.0359735		0
1		Sine.		Tang.		Secant.	M

67 Degrees.

Mmm 2

M	Sine		Tang.		Secant.		
c	9.5918780	9.9640261	9.6278519	10.3721481	10.0359739	10.4081220	60
1	9.5921755	9.9639724	9.6282031	10.3717969	10.0360276	10.407 8245	40
2	9.5924728	9.9639187	9.6285540	10.3714460	10.0360813	10.4075272	58
	9.5927698		9.6289048	10.3710952	10.0301350	10.4072302	57
	9.5930666		9.6292553	10.3707447	110.0301888	10.4069334	156
5	9.5933661	9-9637574	9.6295057	10-3703943	10.0362426	10.4066369	55
6	9-5935594	9.9637036	9.6299558	10.3700442		10.4063406	-
	9-5939555			10.3696942	10.0363504	10.4060445	62
	9-5942513			10.3693444	10.0354042	10.4057487	52
	9-5945469			10.3689948	10.0364483	10.4054531	51
10	9.5948422	9.9634877	9.6313542	10.3586455	10.0365123	10.4051578	50
1	9.5951373	9.9624236	9.6317037	10.3682963		10.4048627	
Pr- 1/2	9-5954322	The state of the s		10.3679473	10.0366205	10.4045678	18
	9-5957268			10.3675985	10.0366947	10-4042732	47
	9.5950212			10.3672499	10.0367289	10.4039788	16
I	9.5963154	9.9632168		10 3669015	10.0367832	10.4036846	44
	9.5966093		9.5224468	10.3665532		10.4033907	
	9.5969030			10.3662052	10.0268018	10.4030970	177
	9.5971965			10.3658574	10.0259462	10.4028035	42
	9-5974897			10.3655097	10.0370006	10.4025103	41
	9.5977827			10.3651622	10.0370661	10.4022173	40
	9.5980754			10.3648150			-
2	9.5983680	0.0628258		10.3644679	10.0371642	10.4019246	39
	9-5986602		9.63 48790	10.3641210	10.0272188	10.4013398	38
	9.5989523		9.6362257	10.3637743	10.0272724	10.4010477	
	5 9.5992441			10.3634278		10.4007559	30
100	6,9.5995357			10.3630815			-
			9.6372646	10.3627354	10.0373826	10.4004643	34
21	80.6001181	9.0625076	9.6276196	10.3623894	10-0374376	10.4001730	33
b	9.6004000	9.9624427	9.6370562	10.3620437		10.3998819	
B	9.6006007	9-9623978	9.6382010	10.3616981	10.0276022	10.3995910	13.
F		The second secon	-33-3		3.03/0022		-
1	100	Sine		I ang.		Secant.	M

M	Sine.		l'ang'		Secant.		1
30	9.6006997	9.9623978	2.6383019	10.3616981	10. 0376022	10.399300	3
		9.9623428		10.3613527	10.0376572		
		2.9622878		10.3610075	10.0377122		
33	9.6015703	9.9622328		10.3605625	10.0377672		
34	9.0012000	9-9621777		10.3603177	10.0378123		
		9.9621226		10.3599731	10.0378774	10.3978505	2
		9.9620574	9.6403714	10.3596286	10.0379326	10.3975612	2
		9.9620122		10.3592844	10.0375878		
38	9.6030106	9.9619569		10.3589403	10.0380431		
	9.0033052	9.9619016		10.3585964	10.0380984	10 3966948	21
		9.9618463	9-6417473	10.3582527	10.0381537	10.3964064	20
		9.9617909		10.3579092	10.03 32091	10.2961162	1
		9-9617355		10.3575558	10 0382645	10.2058204	1
		9.9615800		10.3572227	10.0383200	10.3955427	1
		9.9616245		10.3568797	10.0383755	10.3952552	14
ш		9.9615689		10.3565370	10.0384311	10.3949680	1
		9.9615133	9 6438057	10.3561943	10.0384867	10.2346810	
		9.9614576	9.6441481	10.3558519	10.0385424	10.3043943	1
18	9.0058923	9.9614020	9.6444903	10.3555097	10.0385080	10.3941079	1
19	9.0001786	9-9613453	9.6448324	10.3551676	10.0386538	10.3938214	11
		9.9612904	9.6451743	10.3548257	10.0387096	10.3935353	10
		9.9512346	9.6455160	10.3544840	10.0387654		
		9.9611787	9.6458575	10.3541425	10.0388213	10.2929628	1
		9.9611228	9.6461988	10.3538012	10.0388772	10.2925784	
		9.9610668	9 6465400	10.3534600	10.0389332	10.3923932	1.
-		9.9610108	9.6468810	10.3531190	10.0389892	10.3921082	
		9.9609548	9.6472217	10.3527783	10.0390452		-
		0.9608987	17.6475624	10.3524376	10.0391013	10.2916280	
		9.9608426	9.6479028	10.3520972	10.0391574		
		9.9607864	2.6482431	10.3517566	10.0392136	10.2900706	1
0	9.0093133	9.9607302	9.6485831	10.3511469	10.0392698	10.3906867	1
	16.	Sine.		400		Secant.	-

M	Sine.		Tang.		Secant.		7
0	9.6093133	9.9607302	9.6485831	10.3514169	10.0392698	10.3906867	60
		9.9606739	9.6489230	10.3510770	10.0393261	10.3904031	
2	2.6098803	9.9606176		10.3507372	10.0393824		
2	9.6101635	9.9605612	19.6496023	10.3503977		10.3898365	
4	9.6104465	9.9605048	7.6499417	and the second s	10.0394952	10.3895535	156
5	9.6107293	9.9604484	9.6502809			10.3892707	-
6	9.6110118	9.9603919	9.6506199			10.3889883	
7	9.6112942	9.9603354	9.6509587		10.0396640	10.3887059	53
8	9.6115762	9.9602788	9.6512974		10:0397212	10.3884238	52
9	9.6118580	9.9602222	9.6516359		10.0397778	10.3881420	51
	9.6121397		9.6519743	10.3480258		10.3878603	-
11	9.6124211	9.9601088	9.6523123			10.3875489	
12	9.6127023	9.9600520	9.6526503			10.3872977	
		9.9599952	9.6529881	10.3470119		10.3870167	
14	9.6132641	9.9599384	9.6533257	10.3466743		10.3867359	
15	9.6135446	9-9598815	9.6536631	10.3463369		10.3864554	-
16	9.6138250	9.9398246		10 3459996		10.3861750	
17	9.5141051	9.9597676	9.6543375			10.3858949	
		9-9597606	9.6546744		10.0402894	10.38 561 50	4
		9-9596535		10.3449888		10.3853353	
20	9.6149441	9.9595964	9.65534.77			10.38,0559	-
		9.9595393	9.6556841	10.3443159		10.3847766	
22	9.6155024	9.9594821		10.3439796		10.3844976	
		9-9594248		10.3436436		10.3842188	
		9.9593675		10.3433077		10.3839401	
		9.9593102	9.6570280				-
		9.9592528	9.5573636			10.3833836	
		0.9591954		10.342301		10.3831056	
28	9.6171721	9.9591380	9.6580341	10.3419559		10.3828279	
		9.9590805	9.658369			10.3822730	
30	9.0177270	9.9590229	9.6587041	10.3412900		-	3
*	1	Sine.				Secant.	IN

	Sine		Tang		Secant		
5	9.6177270	7.9590229	9.6587041	10.3412960	10.0409771	10.3822730	-
		9.9589653	9.6590387	10.3409613	10.0410317	10.3819959	2
1	9.6182809	9.9589077		10.3406267	10.0410923	10.3817191	2
		9.9588500		10.3402924	10.0411500	10.3814424	2
		9.9587923	9.5600418	10.3399582	10.0412077	10 3811659	2
		9.9587345	9.6603758	10.3396242	10.0412655	10-3808897	2
1	-	.9586767	9.6607097	10.3392903	10.0413233	10.3806136	2
ļ	9.619662:	9.9586188		10.3389565		10.3803378	
۱	3.619937	1.9585609		10.3386231	10.0414591	10.3800622	2
١		9.9585030	9.6617103	10.3382897	10.0414970	10.3797868	2
1		9.9584450	9.5620434	10.3379506	10.0415550	10.3795116	2
١	0.6207624	9.9583869	9.6522765	10.3376235	10.0416131	10 2792266	1
I	9.6210282	9.9583288		10.337290	10.0416712		
١	9.6213127	9.9582707		10.3369580	10.0417293		
١	9.6215871	9.9582125		10.3356255	10.0417875		
I	9.6218612	9.9581543		10.3362931	10.0418457	10.3781388	3
١	0.6221251	9.9580961	0.6640201	10.3359609	10.0419039	10.2778649	1
I	0.6224088	9.9580378		10.3356289	10.0419622		
I	9.6226324	9.9579794		10.3352970	10.0420206		
		9.9579210		10.3349654	10.0420790		1
I		9.9578625	19.6653662	10.3346338	10.0421374		1
1	9.6224016	9-9578041		10.3343025	10.0421959	10,2764984	
		9-9577456		10.3339712	10.0422544		
	9.6240468	9-9575870		10.3336402	10.0423130		
	9.6243190	9.9576284		10.3333093	10.0423716	10.3756810	
	9.6245911	9-9575697	9.6670214	10.3329786	10,0424303	10.3754089	-
-	9.6248629	9.9575110	9.6872419	10.3326481	10.0424890	10.2751271	
7		9.9574522		10.3323177	10.0425478	10.3748644	
		9-9573934		10.3319874	10.0426066	10-3745940	1
7		9.9573346		10-3316574	10.0426654	10.3743228	
		9.9572757		10.3313275	10.0427243	10.3740517	1
-		Sine.	1	Tang.		secant.	I

M	Sine.		Tang		Secant.	
c	9.6259483	9-9572757	9.6686725	10.3313275	10.0427243	10.3740517 6
1	9.6262191	9.9572168	9.6690023	10.3309977		10.3737809
3	9.5264897	9.957-1578		10.3306081	10.0428422	
2		9.9570988		10.3303387	10.0429012	
4		9.9570397		10.3300094	10.0429603	
5		9.9569806	-	10.3296803	10.0430194	
		9.9569215		10.3293514		10.3724299
7		9.9568623		10.3290226		10.3721603
+		9.9568030		10.3286940		10.3716218
9		9-9567437		10.3283655		10.3713528
		9.9566844				
11		9.9566250		10.3277090		10.3710840
46573	9.0291849	9.9565656		10.3273810		10.3705471
13		9.9564466		10.3267255		10-3702789
14		9.9563870		10.3263980	10.0436120	10.3700110
-		-				10.3697432
IĆ		9.9563274		10.3260706	10.0437322	
		9.9562081		10.3254164	10.0437915	
		9.9561483		10.3250895	10.0438517	4 4
		9.9560886		10.3247628	10.0439114	10.3686742
-		9.9560287	0.6755628	10.3244362	10.0439713	- 0
		9.9559689		10.3241097	10.0440311	
		9.9559089		10.3237835	10.0440911	10.3678745
		9.9558490		10.3234574		10.3676084
25	9.6326576	9.9557890	9.6768686	10.3231314	10.0442110	10.3673424
26	9.6329233	9.9557289	9.6771944	10.3228056	10.0442711	10.3670767
		9.9556688		10-3224799		10.3668111
		9.9556087		10.3221544		10.3665454
25	9.6337194	9.9555485		10.3218291		10.3662806
30	9.6339844	9.9554882	9.6784961	10.3215039	10.0445118	10.3660156
		Sine.	1	Tang.		Secant.

M	Sine.		Tang.	×	Secant.		
20	0.6220844	9.9554882	9.6784961	10.3215039	The second second second	10.3660156	_
21	0.6242401	9.9554280	9.6788211	10.3211789	10.0445720	10,3657509	29
22	0.6245127	9.9553676	9.6791460	10.3208540	10.0446324	10.3654863	28
33	9.6247780	9.9553073	9.6794708	10.3205292	10,0446927	10.3652220	27
34	0.6350422	9.9552489	9.6797953	10.3202047	10.0447531	10.3649578	26
35	9.6353062	9.9551864	9.6801198	10.3198802		10.3646938	_
36		9.9551259	9.6804440	10.3195560	10.0448741	10.3644301	24
37	0.62 :8225	9.9550653	9.6807682	10.3192318	10.0449347	10-3641665	23
38	9.6360969	9.9550047	9.6810921	10.3189079	10.0449953	10.3639031	22
	9.6363601	9-9559441	9.6814160	10.3185840	10.0450559	10.3635399	21
40	9.6366231	9.9558834	9.6817396	10.3182604		10.3633709	
41		9.9548227		10.3179368	10.0451773	10.3631141	15
12	9.6371484	9.9547619	9.6823865	10.3176135	10.0452381	10.3628516	18
13	9.6374108	9.9547011		10.3172902	10 0452989	10.3625892	I
14	9.6376731	9.9546402		10.3169672	10.0453598	10.3623269	10
45	9.6379351	9.9545793	9.6833557	10.3166443	10.0454207	10.3620649	L
46	9.6281060	9.9545184	9.6836785	10.3163215	10.0454816		1
47	9.6384585	9.9544574		10.3159989	10.0455426	10.3615415	1
18	9.6387199	9-9543963		10.3156764	10.0456037	10.3612801	1:
49	9.6389812	9-9543352		10.3153541		10.3610188	
50	9.6392422	9.9542741	9.6849681	10.3150319	10.0457259	10-3607578	10
51	9.6395030	9.9542129	9.6852901	10.3147099	10.0457871	10.3604970	- 1
		9.9541517		10.3143880	10.04 58483	10.3602363	1
		9.9540904		10.3140662	10.0459096	10.3599759	
54	9.6402844	9.9540291		10.3137447	10.0459709	10.3597156	1
55	9.6405945	9.9539677	9.6865768	10.3134232	10 0460323	10.3594555	
56	9.6408044	9.9539063	9.6868961	10.3131019	10.0460937	10.3591956	1
		9.9538448		10.3127808	10.0461552	10.3589360	1
58	9.6413235	9.9537833		10.3124598	10.0462167	10.3586765	
		9.9537218		10.3121389	10.0462782	10.3384172	1
50	9.6418420	0.9536602	0.6881818	10.3118182	10.0463398	10.3581580	-
		Sine.		Tang.	1 4	Secant.	N

M	Sine		Tang.		Secant.		
		9.9536602	9.6881818	10.3118182	10.0463398	10.3581580	60
1	9.6421009	9.9535985		10:3114977	10.0464015	10.3578991	59
3	9.6426182		9.6891430	10.3108570	10.0465249	10.3573818	57
		9.9534134	9.6897831	10.3102160	10.0466485	10.3568653	55
6	9.6433926	9.9532879		10.3098970	10.0467722	10.3566074	53
8	9.6439080	9.9531658		10.3092578		10.3560920	
IC	9.6444226	9.9530418	9.6913809	10.3086191	10.0469582	10.3555774	50
12	9.6449365	9.9529797	9.6920189	10.3079811	10.0470825	10.3550635	48
14	9.6454496	9.9528553	9.6926565	10.3076622	10.0472069	10.3548069	46
-		9.9527308		10.3067066		10.3542942	_
19	9.646217	9.9526061	9.6936117	10.3063883	10.0473939	10.3537822	43
15	9.6467290	9.9524813	9.6942478	10.3057522	10.0475187	10.3532710	41
2	9.647239	9.9523562	9.6948833	10.3051167	10.0476438	10.3527605	39
2	9.647749	9.9522936	9.6955183	10.3047991	10.0477690	10.3525055	37
		8 9.9521683 2 9.9521055		10.3041645		10.3519962	
		9.9520428		10.3035303		10.3514876	
2	8 9.649020	9.9519171	9.697103	10.3028968	10.0480829	10.3509797	3:
3	09.649527	4 9.9517912	9.697736	10.3022637		10.3504726	3
	1 -1	Sine.	l.	Tang.		Secant.	M

26 Degrees,

M	Sine.		Tang.	X	Secant.	N'A SA	
30	9.6495274	9.9517912	9.6977363	10.3022637	10.0482088	10.3504726	3
31	9.6497807	9.9517282	9.6980526	10.3019474	10.0482718	10.3502193	2
		9.9516651	9.6983687	10.3016313	10.0483349	10.3499662	
		9.9516020	9.6986847	10.3013153		10-3497132	
34	9.6505395	9.9515389		10.3009994	STATE OF THE PARTY	10.3494605	
35	9.6507920	9-9514757	9.6993164	10.3006836	10.0485243	10.3492080	2
35	9.6510444	9.9514124	9.6996320	10.3003680	10.0485876	10.3489556	
		9.9513492		10.3000526	10.0486508		
38	9.6515486	9.9512858		10.2997372		10.3484514	
		9.9512224	9.7005780	10.2994220	A SOUTH A PER SERVICE AND A SERVICE	10.3481996	4
10	9.6520521	9.9511590	9.7008930	10.2991070	10.0488410	10.3479479	2
I	9.6523035	9.9510956	9.7012080	10.2987920	10.0489044	10.3476965	1
		9.9510325	19.7015227	10.2984773	10.0489680		
3	9.6528059	19.9509685		10.2981626	10.0490315		
4	9.6530568	9.9509049	9.7021519	10.2978481	10.0490951	10.3469432	1
5	9.6533075	9.9508412	9.7024663	10-2975337	10.0491588	10.3466925	1
6	9.6535581	9.9507775	9.7027805	10.2972195	10.0492225	10.3464419	1
	9.6538084		9.7030948	10.2969054	10.0492862	10.3461916	I:
8	9.6540586	9.9505500	9.7034086	10.2965914	10.0493500	10.3459414	
	9.6543086			10.2962775	10.0494139	10.3456914	1
0	9.6545584	9.9505223	9.7040362	10-2959638	10.0494777	10.3454416	10
I	9.6548081	9.9504583	9.7043497	10:2956503	10.0495417	10.3451919	
2	9.6550575	9.9503944	9.7045632	10.2953368	10.0496056	10.3449425	
		9.9503303	9.7049765	10.2950235	10.0496697	10.3446932	3.5
		9.9502663		10.2947103	10.0497337	10.3444441	1
5	9.6558048	9.9502022	9.7056027	10.2943973	10 0497978	10.3441952	3
		9.9501380	9.7059156	10.2940844	10.0498620	10.3439464	
	9.6563021		9.7062284	10.2937716	10.0499262	10.3436979	1
		9.9500095		10.2934590	10.0499905	10.3434495	
9	9.6567987	9.9499452	9.7058535	10-2931465	10.0500548	10,3432013	
0	9.6570468	0.9498809	9.7071659	10.2928341	10.0401191	10.3429532	4
		Sine.	His sec	Tang.		Secant.	M

A Table of Artificial Sines,

27 Degrees.

M	Sine		Tang.	1 46	Secant.		
0	9.6570468	9.9498809	9.7071659	10.2928341	10.0501191	10.3429532	60
I	9.6572946	9.9498165	9-7074781	10.2925219		10.3427054	
	9.6575423		9.7077902	10.2922098		10.3424577	
	9.6577898		9.7081022	10.2918978	10.0503124	10.3422102	57
4	9.6580371	9.9496230	9.7084141	10.2915857	10.0503770	10.3419629	50
	9.6582842		9.7087258	10.2912742	10.0504415	10-3417158	5
6	9.6585312	9-9494938	9.7090374	10.2909626	10.0505062	10.3414688	54
7	9.6587780	9.9494292	9-7093488	10.2906512	10.0505708	10.3412220	5
8	9.6590246	9.9493645		10.2903399	10.0306355	10.3409754	5:
9	9.6592710	9.9492997		10.2900287		10.3407290	
IC	9.6595173	9.9492349	9.7102824	10.2897186	10.0507551	10.3454827	50
11	9.6597634	9.9491700	9-7105933	10.2894067	10.0508300	10.3402367	4
	9.6600093			10.2890959	10.0508949	10.3399907	4
		9.9490402	9.7112148	10.2887852	10.0509598	10.3397450	4
		9.9489752	9-7115254	10,2884746		10.3394995	
		9.9489101	9.7118358	10 288 1642	10.0510899	10.3392541	4
	-	9.9488450	0.7121461	10.2878539		10.3390089	_
		9.9487799		10.2875438		10.3987639	
		9.9487147		10.2872338		10.3385190	
		9.9486495		10.2869239		10.3382743	
		9.948 5842		10.2866141		10.3380298	
-		9.9485189		10.2863044		10.3377855	-
		9.9484535		10.2859949		10.3375414	
		9.9483881		10-2856855		10.3372974	
		19.9483227		10-2853763		10.3370536	
		9.9482572		10-2850671		10.3368100	
-		9.9481971		10.2847581		10.3365665	1-4
-	70.662676	89.9481260		10.2844492		10.3363232	
		9.9480604		10.2841405		10.3360801	
		8 9.9479947		10.2838318		10.3358372	
2	0.0.664405	69.9479289		10-2835233		10.3355944	
-	-	Sine		Tang.			1

	Secant.		Tang.	1	Sine.	11
0.3355944	10.0520711	10.2835233	9.7164767	0.0479289	.6644056	
0.3353518	10.0521369	10.2832149		0.0478621	1616190	19
0.33510942	10.0522027	10.2829067	9.7170933		.6646482	1 9
0.33486712	10.0522686	10.2825986	9.7174014	9/9477314	.6651329	19
0.3346251	10.0523345	10.2822906	9.7177094	9.9476655	.6653749	1 0
0,3345092	10.0524005	10.2819827	9.7180173	9.9475995	.6656168	
0.33414142	10.0524665	10.2816749	9.7183241		2.6658586	
0.333899912		10.2813673	9.7186327	9.9474674	9.6661001	7 2
0.3336585 2	10.0525987	10.2810598		9.9474013	0.6663415	2 2
0.3334172 2		10.2807524	9.7192476	9-9473352	0.6665828	0 0
0.3331762 2	10.0527311		9-7195549	9.9472689	9.6668238	0 9
0.3329353 1	10.0527973	10.2801380	9.7198620	9.9472027		
0.3326946 1	10.0528636	10.2798309		9.9471364		13
0.3324541 1		10.2795241		9-9470700	0.6675450	
0.33221371	10.0529964	10.2792173	9.7207827	9.9470036	0.6677862	
0.33197351	10.0530628	10.2789107	9.7210893	9-9469372	9.6680265	5
C.3317335 I		10.2786042	9.7212948	9.9468707	0 6682665	1
0.33149361	10.0531948	10.2782978	9.7217022	9.9468042	0.668 4064	7
0.33125391	10.0532624	10.2779915		9.9467376	0.6687461	8
0.33101441	10.0533290	10.2776853		9.9466710	0.6689856	0
0.3307750	10.0533957	10.2773793		9.9466043	9.6692250	0
	10.0534624	10.2770734	9.7229276	9.9465336		
0.2302968	10.0535292	2 1 1	9-7232324	9.9464708	0.6607022	2
10.2300480	10.0535960		9.7235381	9.9464040	0.6699420	2
10.3298193	10.0536629	10.2761564	9.7238436	9.9463371	9.6701807	4
10.3295808	10.0537298	10.2758510	9.7241490	9.9462702	9.6704192	5
10.3293424		10.2755457		9.9462032		
10.3291042	10.0538628	10.2752405		9.9461362	0.6708048	7
10.3288662	10.0539308	10.2749354		9.9460692	9.6711328	8
10.3286284		10.2746305		9.9460021	9.6713716	9
10.3283907	10.0540651	10.2743256		9-9459349	9.6716093	0
Secant.	The state of	(10)		Sine.		

A Table of Artificial Sines.

28 Degrees.

M	Sine.		Tang.		Secant.	•	
0	9.6716093	9-9459349	9.7256744	10.2743256	10.0540651	10.3283907	60
1,	9.6718468	9.9458677		10.2740209	10.0541323		
2	9.6720841	9.9458005		10.2737163	10.0541995		
		9.9457332		10.2734119	10.0542668		
		9.9456659		10.2731075	10.0543341		
5	9.6727952	9.9455985		10.2728033	10.0544015		-
		9.5455310		10.2724992	10.0544690		
7	9.6732684	9.9454636		10.2721952	10.0545364		
8	9.0735047	9.9453960		10.2718913	10,0546040		
9	9.0737409	9.9453285		10.2715876	10.0546715		
-		9.9452609		10.2712839			-
11	9.6742128	9.9451932		10.2709804	10.0548068	10.9257872	49
		9.9451255		10.2706770	10.0548745		
		9.9450577		10.2703737	10.0549423		
4	9.6749194	9.9449899		10.2700705	10.0550101		
-		9.9449220		10.2697675			-
	9.6753896			10.2694646	10.0551459		
		9.9447862		10.2691617	10.0552138		
		9.9447182		10.2688590	10.0552818	10.3239063	
		9.9446501		10.2685564	10.0554179		
-	9.6763281						-
		9.9445139		10.2679516	10.0554861		
		9-9444457		10.2676494	10.0555543	10.3232037	
		9-9443775		10.2670453	10.0556008	10.3227360	3
		9.9443092	0.7222466	10.2667434		10.322502	
-							-
		9.9441725		10.2664416	10.05582/5	10.3222691	34
		9.9441042		10.2661399	10.0550644	10.3220358	3
		9.9440356		10.2655369	10.0560220	10.3215699	3
2	0.6786620	9.9438985		10.2652356	10.0461014	10.3213371	20
1	7	0:	7.7547544			0	-
		Sine.	1.	lang.		Secant.	M

M	Sine.		Tang!		Secant.		
	9.6786629	0.0428085	1	10.2552356	10.0561015	10.3213371	10
21	9.6788955	9.9438299	9.7350656	10.2649344		10.3211045 2	
32	9.6793602		9.73556677	10.2546333	10.0563075	10-3206398 2	7
33	9.6795923		9.7359685	10.2640315		10.3204077	
35	9-6798243	9-9435549		10.2637307		10.31994402	-
36	9.6800560		9.7305699	10.2634301	10.0464828	10.3197123	H
37	9.6802877		9.7371709	10.2628291	10.0566518	10.3194809	12
20	9.6807504	9.9432792	9.7374712	10,2625288		10.3192496	
40	9.6809816	9.9432102		10.2622286		10.3187874	0.0
41	9.6812126	9.9431411	9.7380715	10.2619285	10.0569280	10.3185566	18
42	0.6816741	9.9430720	9.7386713	10.2613287	10.0569972	10.3183259	17
44	19.6819046	9.9429335		10.2610290	10.0570005	10.3180954	16
		9.9428643	9-7392707			10.3176349	-
40	9.6823651	9.9427949	0.7208606	10.2604298	10.0572749	10.3174048	13
48	9.6828250	9.9426561	9.7401689	10.2598311	10.0573439	10.3171750	12
40	9.6830548	9-9425866	9.7404681	10.2595319	10.0574134	10.3169452	11
	-	9.9425171		10.2592328		10.3164863	9
5	0.6827420	9.9424476	9.7413650	10.2586350	10.057622	10.3162570	8
1	29.6839720	9.9423083	9.7416638	10.2583362	10.057691	10.3160280	7
5	4 9.6842010	9.9422386		10.2580376	10.057701	10.3157990	0
		9.9421688		10.2574406	The second contract of the con	0 10.3153417	-
15	7 9.684886	9.9420291	19.742857	7 10.2571403	10.057970	9 10.3151132	-4
5	8 9.685115	1 9.9419592	9.743155	9 10.2558441	10.058040	3 10.3148849	
		2 9.9418893	9.743454	0 10.2565450	10.058110	7 10.3146568	1
0	3,0055/1	Sine.	1			Secant.	100

M	Sine.		Tang.		Secant		1
. 0	9.6855712	9.9418193	9.7437520	10.2562480	10.0581807	10.3144288	60
1	9.6857991	9.9417492	9.7440499	10.2559501		10.3142009	-
2	9.6360267	9-9416791		10.2556524	10.0583200	10.3139733	58
3	9.5862542	9.9416090		10.2553547	10.0582010	10.3137458	57
4	9.5854816	9.9415388		10.2550572	10.0584612	10.3135184	56
5		9.9414685	9.7452403	10.2547597	10.0585315	10.3132912	55
6	9.6869359	9.9413982	9-7455376	10.2544624		10.3130641	-
7	9.6871628	9.9413297	9-7458349	10.2541651	10.0586721	10.3128372	53
8	9.6873895	9.9412575		10.2538680	10.0587425	10.3126105	52
9	9.0870101	9.9411871		10.2535700	10.0588 129	10.3123839	51
10			9.7467259	10.2532741	10.0588834	10.3121575	50
11		9.9410461		10.2529773	10.0589539	10.3119312	49
	9.6882949			10.2526806		10.3117051	
13	9.6885209	9.9409048		10.2523840		10.3114791	
		9.9408342	9-7479125	10.2520875	10.0 591658	10.3112533	46
11/10/	9.6887923			10.2517911	10.0592366	10.3110277	45
16	9.6891978	919406927		10.2514948	10.0593073	10.3 108022	44
17	9.6894232	9.9406219		10.2511987	10.0593781	10.3105768	43
18	9.0090404	9.9405510		10.2509026		10.3103516	
	9.6900983			10.2506066	10.0595199	10.3101266	
-				10.2503108	10.0595909	10.3099017	40
21	9.6903231			10.2500150	10.0596619	10.3096769	39
		9.9402670		10.2497194	10.0597390	10.3094524	
	9.6907721		9.7505702	10.2494238	10.0598041	10 3092279	
	9.6912205			10.2491284	10.0598752	10.3090036	
-	CONTRACTOR ASSESSMENT			10.2488331	10.0599465	10.3087795	-
	9.6914445	9.9399823		10.2485378	10.0600177	10.3085555	34
	9.6918919			10.2482427	10.0600890	10.3083317	
	9.6921155			10.2479477	10.0301604	10.3081081	
	9.6923388		9-7526420	10.2476528	10.0602318	10.3078845	
2	74337		2.7,20420	-	10.0003032	10.3076612	-
		Sine.		lang.	100	Secant:	M

		Secant.		Tang.		Sine.
2 30	10.3076612	10.0603032	10.2473580	9.7526420	9.9396968	
0 2	10.3074380	10.0603747	10.2470632			
9 2	10.3072149	10.0604463	10.2467686	9.7532314	9.9395537	602784
0 2	10.3009920	10.0605179	10.2404741	9.7535259	9.9394821	.6020080
4 20	10.3007692	10.0605895	10.2461797	9:7538203	9.9394105	0.6932308
		10.0606612	10.2458854	9.7541146	9.9393388	9.6934534
2 2	10.3003242	10.0607329	10.2455912	9.7544088	9.9392671	9.6926758
912	10.3001019	10.0608047	10.2452971	9-7547029	9.9391953	9.6928981
1 2	10.3056797	10.0608766	10-2450031	9.7549969	9.9391234	9.694 1203
8 2	10.30505//	10.0509485		9.7552908	9.9390515	9.6943423
-	The second second second second			9.7555846	9.9309790	9.6945642
		10.0610924		9.7558783	9.9389076	9.6947859
		10.0611644	10.2438282	9.7561718	9.9388350	9.6950074
0 1	10.304/712	10.0612365	10.2435347		19.9387035	9.6952288
		10.0613808		9.7557587	9.9386914	9.6954501
				9.7570520	9.9386192	9.0950712
01	10.3041070	10.0514530	10.2426348	9-7573452	9.9385470	9.6958922
		10.0615976	10.2423617	9.7570303	9.9384747	9.6951130
		10.0616700	10.7417758	0.7582242	9-9384024	9.0903330
		10.0517424	16.2414830	0.7485170	9-9383300	0.6067774
		10.0518149	10.2411904	-	0.038 18 4	2.090//49
2	10.30278	10.0618874	10.2408978	9.7501022	9.9381851	0.6072149
		10.0619600	10.2406053	9.7593947	9.9380400	0.6074247
		10.0520326	10.2403129	9.7596871	9.9379674	9.6976545
9	10.302125	10.0621053	1 6	9-7599794	9.9378947	9.6978741
54	10.301906	10.0621780	10.2397384	9.7602716	9.9378220	0.6080026
71	10.301687	10.0622508	10-2394363	9.7605637	9.9377492	9.6983129
	10.301467		10-2391443	9.7608557	19.9376764	9.6985321
		10-0623965	10.2388524	9.7611476	19.9376035	9.6987511
30	10.301030	10.0024094	10.2385606	9.7614394	9.9375306	9.6989700
. 7	Secant.	18.00		1 1 1 1	Sine.	1

M	Sine,	1	Tang.		Secant.	5 2 4	
•	9.6989700	9.9375306	9.7614394	10.2385606	10.0524694	10.3010300	60
-	-	9.9374577	9.7617311	10.2382689	10.0625423	10.3008113	59
		9.9373847	9.7620227	10.2379793	10.0626153	10.3005927	\$8
		9.9373116		10.2376858	10.0626884		
		9.9372385		10.2373944	10.0627615	The second secon	
5		9.9371653	9.7628989	10.2371031	10.0628347	10.2999378	55
-6	9.7002802	9.9370921	9.7631881	10.2368119	10.0629079	10.2997198	54
-	9.7004981	9.9370189	9.7634792	10.2365208	10.0629811		
8	9.7007158	9.9369456	9.7637702	10.2362298	10.0630544	10.2002842	52
		9.9368722	9.7640612	10.2359388	10.0631278	10.2990666	51
		9.9367988	9.7643520	10.2356480	10.0632012	10.2988492	50
227500	-	9.9367254	9.7646427	10,2353578	10.0632746	10.2986319	49
H	9.701584	9.9366519		10.2350666		10.2984148	48
	9.701802	9.9365783		10.2347761		10.2981978	47
H	9.702019	9.4365047		10.2344857	10.0634953	10.2979810	46
1	9.702235	9.9364311		10.2341953	10.0635689	10.2977663	45
-		9.9363574	A STATE OF THE PARTY OF THE PAR	10.2339051	10.0636426		-
1	0.702668	9.9362836		10.2336149		10.2973313	
		9.9362098	9.7666751	10.2333249	10.0637902	10.2971151	42
13	0.702101	9.9361360		10.2330349	10.0628640	10.2968989	41
4	9.702217	9.9360621	19.7672550	10.2327450	10.0639379		40
-				10.2324552	10.0540119	13 (9)	20
2	9.703532	919.9359881		10.2321656		10.2962514	
13	9.703746	6 9.9359141		10.2318760	10.0641599		
2	9.703904	1 9.9358401	11 40	10.2315865	10.0642240	10.2958209	
	0.704204	7 9.9356918	11 40	910.2312971	10.0643082	10.2956052	35
-		the state of the s				10.2953901	-
2	1 0	9.9356177		2 10.2310078 4 10.2307186		10.2951752	
2		8 9.9355434	1.1	5 10.2304295		10.294960	
	the state of the s	79.9354691		610.2301404		10.2947457	
2	9.705254	9.9353948	9.770148	510.2298515		10.294531	
1		Sine.		Tang.		Secant.	M

V.	Sine.		Tang.		Secant.		
-		0252204	0.7701485	10.2298515	10. 0646796	10.2945311	0
1 2 3 4 3 5 3 6 3 7 3 8 3 9 4 0	9.7076064	9.9352459 9.9351715 9.9350969 9.9350223 9.9349477 9.9348730 9.9347983 9.9347235 9.9346486 9.9345738	9.7704373 9.7707261 9.7710147 9.7713033 9.7715917 9.7718801 9.7721684 9.7724566 9.7727447 9.7730327	10.2295627 10.2292739 10.2289853 10.2286967 10.2284083 10.2281199 10.2278316 10.2275434 10.2275434 10.227553	10.0547541 10.0648285 10.0649031 10.0649777 10.0650523 10.0651270 10.0652765 10.0653514 10.0654262	10.2943167 2 10.2941025 2 10.2938884 2 10.2936744 2 10.2934606 2 10.2932469 2 10.2930333 2 10.2928199 2 10.2926067 2	9876
42 43 44 45 46 47 48	9.7090323 9.7082450 9.7084575 9.7086699 9.7088822 9.7090943 9.7093063 9.7095182	9.9344988 9.9344238 9.9343488 9.9342737 9.9341986 9.9341234 9.9340482 9.9339729 9.9338976	9.7736084 9.7738961 9.7741838 9.7744713 9.7747588 9.7750462	10.2252412 10.2249538 10.2246666 10.2243794	10.0655762 10.0656512 10.0657263 10.0658014 10.0659518 10.066027	10.2919677 10.2917550 10.29154251 10.2913301 10.2911178 10.2909057 10.2906937 10.2904818	
51 55 5 5 5 5 5 5 5	9,7099419 9,7101529 9,7103642 9,710575 9,710997 79,711208 89,711418 99,711629	9.9338222 9.9337467 9.9336713 9.9335957 9.9335201 9.9334445 9.9334445 9.9332931 6 9.9332173 9.9333656	9.776194 9.776481 9.776768 9.777055 9.777341 9.777628 9.777914 9.778201 9.778487		10.066253 10.066328 10.066404 10.066479 10.066555 10.066631 10.066706 10.066782 10.066858	3 10.2900585 7 10.2898471 3 10.2896358 9 10.2894247 5 10.2892137 2 10.2890028 9 10.2887920 7 10.2885814 5 10.2883710 4 10.2881607	The state of the s
-		Sine.	1	4	1	Secant.	1

N	Sine		Tang.		Secant.		
0	9.7118393	9.9330656	9.7787737	10.2212263	10.0669344	10.2881607	%
1	9.7120495	9.9329897	9.7790599	10.2209401	10.0670103	10.2879505	59
	9.7122596	9.9329137	9-7793459	10.2206541	10.0670863	10.2877404	58
	9.7124695		9.7796318	10.2203982	10.0671624	10.2875305	57
	9.7126792			10.2200823	10.0072384	10.2873208	56
5	9.7128889	9.9326854	9.7802034	10.2197966	10.0073146	10.2871111	55
6	9.7130983	9.9326092	9.7804891	10.2195109		10.2869017	
		9.9325330		10.2192253		10.2866923	
		9.9324567		10.2189398		10.2864831	
		9.9323804	9.7813456	10.2186544		10.2862740	
IC	9.7139349	9.9323040		10.2183691		10.2860651	_
11	9.7141437	9.9322276	1	10.2180838		10.2858563	
		9.9321511		10.2177987	10.0678489	10.2856476	48
		9.9320746		10.2175136	10.0679254	10.2854391	4
		9.9319980		10.2172287	10.0680020	10.2852307	40
I	9-7149770	9.9319213	9.7830562	10 2169438		10.2850224	-
1	9.715185	9.9318447	9.7833410	10.2166590		10.2848143	
1	19.715393	19.9317679	9.7836258	10.2163742	10.0682321	10.2846063	4
		9.9316911		10.2160896		10.2843985	
I	9.715809	9.9316143		10.2158051		10.2841908	
24	9.716016	9.93 1 5374	9.7844794	10.2155206	10.0684626	10.2839832	4
2	19.716224	9.9314605		10.2152362		10.2837757	3
		69.9313855		10.2149519	10.0686169	10.2835684	3
		7 9.9313065		10-2146677		10.2833613	
		8 9.93 1 2294		10.2143836	10.0687700	10.2831542	1
2	5 9.7 1 70 52	6 9.93 1 1522		10-2140996		10.2829474	3
		4 9.9310750		10.2138156		10.2827406	
		09.9309978		10.2135318		10.2825340	
		5 9.9309205	9.7067520	10-2132480	10.069079		
		99.9308432		10-2129643		8 10.2821211	
3	09.718085	19.9307658	9.787319	10-2126807	10.069234	210.2819149	13
-		Sine		Tang.		Secant.	1

M	Sine.		Tang.	-	Secant.		_
30	9.7180851	9.9307658	9.7873193	10.2126807	10.0692342	10.2819149	30
-		9.9306883	9.7876028	10.2123972		10.2817088	
		9.9306109	9.7878863	10.2121137		10.2815029	
		9.9305333	9.7881696	10-2118304		10.2812970	
34	9.7189086	9.9304556	9.7884529	10.2115471		10.2810914	
35	9.7191142	9.9303781	9.7887361	10.2112639	10.0696219	10.2808858	25
-		9.9303004	9.7890192	10.2109808		10.2806804	
		9.9302226	9.7893023	10.2166977	10.0697774	10.2804751	23
38	9-7197300	9.9301448	9.7895852	10.2104148		10.2803700	
		9.9300670	9-7898681	10.2101319	100699330	10.2800650	21
		9.9299881	9-7901508	10.2098492	10.0700109	10.2798601	20
-		9.9299112	9.7904335	10.2095665	10.0700888	10.2795553	19
		9.9198332	9.7907161	10.2092839		10.2794509	
12	9.7207538	0.0297551		10.2090013	10.0702449	10.2792462	I.
44	9.7209581	9.9296770		10.2087189		10.2790419	
45	9.721162	9.9295989		10.2084365	10.0704011	10.2788377	1
46	9.7213664	9.9295207	9.7918448	10.2081542	10.0704793	10.2786336	I
		9.9294424		10,2078720		10.2784296	
		9.9293641		10.2075899	10.0706359	10.2782258	1
49	9.7219779	9.9292857		10.2073079	10.0707143	10.2780221	1
50	9-722181	4 9.9292073	9-7929741	10.2070259	10.0707927	10.2778186	I
51	9.722384	8 9.9291289	9.7932560	10.2067470	10.0708711	10.2776152	
		1 9.9290504		10.2064622		10.2774119	
53	9.722791	3 9.9289718		10.2061805	10.0710283	10.2772087	
54	9.722994	39.9288932		10.2058989	10.0711068	10.2770057	
55	9.723197	2 9.9288145	9.7943827	10.2056173	10 0711855	10.2768028	
56	9.723400	09.9287358	9.7946641	10.2053359	10.0712642	10.2766000	
		69.9286571		10.2050545		10.2763974	
		19.9285783		10.2047732	10.0714217	10.2761949	
		5 9.9284994		10.2044919		10.2759925	
60	9.724209	7 9.9284205	9.7957892	10.2042108		10.2757903	
		Sine.		Tang.		Secant.	N

	0:		177		Cassas		-
M	Sine		Tang.		Secant.		
0	9.7242097	9.9284205	9.7957892	10.2042108	10.0715795	10.2757903	60
1	9.7244128	9.9283415	9.7960703	10.2039297	10.0716585	10.2755882	59
	9.7246138		9.7963513	10.2036487	10.0717375	10.2753862	58
3	9.7248156	9.9281834		10.2033678	10.0718166	10.2751844	57
4	9.7250174	9.9281043	9.7969130	10.2030870	10.0718957	10.2749826	56
5	9.7252189	9.9280251	9.7971938	10.2028052	10.0719749		55
6	9-7254204	9.9279459	9.7974745	10.2025255		10.2745796	
7	9.7256217	9.9278666		10.2022449		10.2743783	
8	9.7258229	9.9277873		10.2019644		10.2741771	
		9.9277079		10.2016840		10.2739760	
10	9.7262249	9.9276285	9.7985954	10.2014036		10.2737751	-
I	9.7264257	9.9275490		10.2011233	10.0724510	10.2735743	49
	9.7266264			10.2008431	10.0725305	10.2733736	48
13	9.7268269	9-9273899	9.7994370	10.2005630	10.0726101	10.2731731	47
	9.7270273		9-7997170	10,2002830	10.0726897	10.2729727	46
15	9.7272276	9.9272305	9.7999970	10 2000030		10.2727724	-
16	9.7274278	9.9271509		10.1997231	10.0728491	10.2725722	44
	9.7376278			10.1994433	10.0729289	10.2723722	43
	9.7278277			10.1991635	10.0730087	10.2721723	42
	9-7280275			10.1988839	10.0730880	10.2719725	4
-	9.7282271	-	9.8013957	10.1986043		10.2717729	49
21	9.7284267	9.9267514		10.1983248	10.0732486	10.2715733	35
		9.9266714		10.1980454	10.0733286	10.2713740	
		9.9265913		10.1977660	10.0734087	10.2711747	3
	9.7290245			10.1974867	10.0734888	10,2709756	3
25	9.7292234	9.9264310	-	10-1972075	10.0735690		3
	9.7294223			10.1969284	10.0736493	10.2705777	3
		9.9262704	9.8033506	10.1966494	10.0737296		3
28	9.7298197	9.9261901		10.1963704		10.2701803	
29	9.7300182	9.9261096		10.1960915			
3°	9.7302165	9-9260292	9.8041873	10.1958127	10.0739708	10.2697835	3
		Sine		Tang.		Secant.	N

M	Sine.		Tang.		Secant.		1
0	9.7302165	9.9260292	9.8041873	10.1958127	10.0739708	10.2697835	3
3	9.7304148	9.9259487	9.8044661	10.1955339		10.2695852	
		9.9258681	9.8047447	10.1952553		10.26.93871	
		9.9257875	9.8050233	10.1949767	10.0742125	10.2691891	2
		9.9257069	9.8053019	10.1946981	10.0742931	10.2689913	2
5	9.7312064	9.9256261	9.8055803	10.1944197	10.0743739	10.2687930	2
5	9.7314040	9.9255454	9.8058587	10.1941413	10.0744546	10.2685960	2
1	9.7316015	9.9254646	9.8061370	10.1938630	10.0745354	10.2683985	2
8	9.7317989	9-9253837	9.8064152	10.1935848	10.0746163	10.2682011	2
		9.9253028	9.8066933	10.1933067		10.2680039	
0	9.7321932	9.9252218	9.8059714	10.1930286	10.0747782	10.2678068	2
1	9-7323902	9.9251408	9.8072494	10.1927506	10.0748592	10.2676098	I
2	9.7325870	9.9250597	9.8075273	10.1924727	10.0749403		
		9-9249786	9.8078052	10.1921948	10.0750214		
		9.9248974	9.8080829	10.1919171	10.0751026		
5	9.7331768	9.9248161	9.8083606	10.1916394	10.0751839	10.2668232	I
6	9.7333731	9.9247349	9.8086383	10.1913617	10.0752651	10.2666264	1
7	9.7335693	9.9246535	9.8089158	10.1910842		10.2664307	
		9-9245721	9.8091933	10.1908067		10.2662346	
		9-9244907	9.8094707	10.1905293	10.0755093		
0	9.7341572	9.9244092	9.8097480	10-1902520		10.2658428	
I	9.7343529	9-9243277	9.8100252	10 1399747	10.0756723	10.25 46471	1
		9.9242461	9.8103025	10.1896975		10.2654515	
3	9.7347440	9.924 1644	9.8105796	10.1894204	10.0758356	10.2652550	
4	9-7349393	9.9240827	9.8108566	10.1891434		10.2650607	
5	9.7351345	9.9240010	9.8111336	10.1888664	10 0759990	10.2648655	1
6	9.7353296	9.9239191	9.8114105	10.1885895	Committee of the Commit	10.2646704	-
7	9-7355246	9.9238373	9.8116873	10.1883127	10.0761927	10.2644754	
8	9.7357195	9-9237554	9.8119641	10.1880359	10.0762446	10.2642805	1
9	9.7359142	9.9236734	9.8122408	10.1877592	10.0763266	10.2640858	-
0	9.7361088	0.9235914		10.1874826	10,0764086	10-2638912	1
-		Sine.		Tang.		Secant.	1

M	Sine.		Tang.		Secant.		
0	9.7361088	9-9235914	9.8125174	10.1874826	10.0764086	10.2638912	60
		9.9235093		10.1872061		10.2636968	
		9.9234272		10.1869296		10.2635024	
		9-9233450		10.1866532		10.2633082	
		9.9232628	9.8130231	10.1863769		10.2631141	
-		9.9231865		10.1861007		10.2629201	-
		9.9230982		10.1858245		10.2627263	
		9.9230158		10.1855484		10.2625325	
		9.9229334		10.1852723		10.2623389	
		9.9228509		10.1849964		10-2621454	
		9-9227684	-	10.1847205		10.2619521	-
		9.9226858		10.1844446	10.0773142		
		9.9226032		10.1841689		10.2615657	
		9.9225205		10.1838932		10.2613727	
		2-4224377		10.1835176		10.2611799	
15	2.7390129	9-9223549	-	10.1833420		10.2609871	-
16	9.7392055	9-9222721		10.1830565		10.2607945	
		9.9221891		10.1827911		10.2506020	
1500		9.9221062		10.1825158		10.2604096	
		9.9320232		10.1822405		10.2502173	
20	9.739974	9.9219401		10.1819553	-	10.2600252	1-
		9.9218570		10.1816902		10.2598332	
		9.9217738		10.1814151		10.2596413	
		9.9216906		10.1811401	10.0783094		
		19.9216073		10.1808652		10.2592579	
25	9.740933	9.9215240		10.1805904		10.2590663	-
		9.9214406		10.1803156		10.2588749	
		9.9213572		10.1800408	10.0786428	10.2386836	39
28	9.741507	9.9212737		10.1797662	10.0787263	10.2584925	32
25	9-7416986	9.9211902	9.8205084	10.1794916	10.0788098	10.2583014	31
30	9.741889	9.9211066	9.8207829	10.1792171	10.0788934	10-2581105	30
35		Sine.	1	Tang.		Secant.	M

420803	9.9211065	0	· · · · · · · · · · · · · · · · · · ·	The second secon		
		9.0207825	10.1792171	10.0788934	10.248110	3
	9.9210229	9.8210574	10.1789426	COMMERCIAL CONTRACTOR	10.2579197	-
422710	9.9209393		10.1785583		10.2577290	
	19.9208555					
		9.8218803	10.1781197			
		9.8221545	10.1778455	10.0793122	10.2571577	2
430325	9.9206039	9.8224286	10.1775714	10.0793961	10.256997	12
				10.0796481	10.2563976	2
				10.0797322	10.2562079	2
439817	9.9201836	9.8237981	10.1762019	-		100
				10 0799006	10.2558288	l
				10.0799849	10,2556204	1
445498	9.9199308			10.0800692	10.2554502	1
447390	9.9198464			10.0801535	10.2552610	1
		-				
				10.0802224	10.2548821	1
				10.0804071	10.2526044	
				10.0804917	10.2545057	
				10.0805763	10.2542172	li
460506	9.9192542			10.0807448	10.2520404	1
462477	9.9191694			10.0808206	FD-2627622	
464358	9.9190844			10.0800144	10.2526612	
466237	9.9189996			10.0810004	10.2522962	
The second second	The second secon	1		10.0810844	10 242799	-
				10.0811704	10.2531085	1
				10.081254	10.2530008	1
		9.8287140	10.1712851	10.0812404	10 250604	1
		9.8289874	10.1710126	10.0814248	10.27.24.294	1
	P.					100
	426520 428423 430325 432226 434126 436024 437921 439817 441712 443606 445498 447390 449280 449280 449280 451169 453056 454953 456828 458712 460595 462477 464358 466237 468115 469992 471868 473743	426520 9.9207717 428423 9.9206878 430325 9.9206039 482226 9.9205200 434126 9.9204360 436024 9.9203519 437921 9.9202678 439817 9.9201836 441712 9.9200994 443606 9.9200151 445498 9.9199308 447390 9.9198464 449280 9.9197619 451169 9.9196775 453056 9.9195929 454953 9.9195083 456828 9.9194237 458712 9.9193390 456537 9.9192542 466237 9.9193390 466237 9.9192542 466237 9.9189996 471868 9.9189996 471868 9.9188296 471868 9.9188296 471868 9.9188296 471868 9.9188296 471868 9.9188296 471868 9.9185942 Sinc.	426520 9.9207717 428423 9.9206878 9.8221545 430325 9.9206039 9.8221545 432226 9.9205200 9.8227026 434126 9.9204360 9.8229766 436024 9.9203519 9.8232505 437921 9.9202678 9.8235244 9.9201836 9.8237981 441712 9.9200994 9.8240719 443606 9.9200151 9.8243455 445498 9.9199308 9.8246191 447390 9.9198464 9.8248926 449280 9.9197619 9.8254191 449280 9.9197619 9.8254394 451169 9.9196775 9.8254394 462477 9.919694 9.8268653 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8276241 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8273513 9.8284423 9.8284423 9.8284423	426520 9.9207717 428423 9.9206878 9.8221545 10.1778455 430325 9.9206039 9.8224286 10.1775714 9.8227026 10.1772974 9.8229766 10.1772974 9.8229766 10.1770234 9.8232505 10.1767495 9.8235244 10.1764756 9.8237981 10.1762019 9.8237981 10.1762019 9.8243455 10.1759281 9.8243455 10.1756545 9.8254394 10.175666 9.8254394 10.1745666 9.8254394 10.1745666 9.8254394 10.1745666 9.8268053 10.1737408 464358 9.9193390 9.8268053 10.1737408 464358 9.9193390 9.8268053 10.1737408 464358 9.9193390 9.8268053 10.1737408 464358 9.919346 9.8273513 10.1720217 9.8268053 10.1737408 9.8273513 10.1726487 9.8273513 10.1726487 9.8276241 10.1723759 9.8276241 10.1723759 9.8276241 10.1723759 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8284423 10.1715577 9.8289874 10.1710126	426520 9.9207717 428423 9.9206878 430325 9.9206039 482226 9.9205200 434126 9.9204360 436024 9.9203519 437921 9.9202678 439817 9.9201836 441712 9.9200994 443606 9.9200151 445498 9.9198464 447390 9.9198464 449280 9.9197619 451169 9.9196775 453056 9.9195929 454127 9.9195929 454127 9.9195929 454127 9.9195929 454127 9.9191694 456828 9.9192542 466237 9.9198464 468115 9.9198464 9.82237881 9.82368053 9.82368053 9.82368053 9.82368053 10.173675 10.0792283 10.0793122 10.07939610 10.0793640 10.0795640 10.0796481 10.0797322 10.0796324 10.1756756 10.0797322 10.0798164 10.0797322 10.0798164 10.0798164 10.0799849 10.1759281 10.0798164 10.0799849 10.1759281 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0798164 10.0797322 10.17564756 10.0798164 10.0799849 10.17564756 10.0799849 10.0798164 10.0799849 10.17564756 10.0799849 10.17564756 10.07998164 10.0799849 10.17564756 10.0799849 10.17564756 10.0799849 10.17564756 10.0799849 10.17564756 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0798480 10.0799849 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0799849 10.17564756 10.0799849 10.0798164 10.0799849 10.0798849 10.17564756 10.0799849 10.0798849 10.17564756 10.0799849 10.0798849 10.17564756 10.0799849 10.0798849 10.17564756 10.08063225 10.0806471	426520 9.9207717 9.8218303 10.1781197 10.0792283 10.2573480 10.1778455 10.1778455 10.0793261 10.2569973 10.2569973 10.2569973 10.0793261 10.2563974 10.0793261 10.2563974 10.0793261 10.2563974 10.0793261 10.2562079 10.079322 10.2562079 10.079322 10.2562079 10.079322 10.2562079 10.0793261 10.2562079 10.0793261 10.2562079 10.0793261 10.2562079 10.0793261 10.2562079 10.0793261 10.2563974 10.0793261 10.0793261 10.2563974 10.0793261 10.0793261 10.2563974 10.0793261 10.0793261 10.2563974 10.0793261 10.079326

M	Sine		Tang.		Secant.	- (
0	9.7475617	9.9185742	9.8289874	10.1710126	10.0314258	10.2524383	8
-		-	9.8292599	10.1707401	10.0815110	10.2522511	59
2	9-7479360			10.1704677	10.0815963	10.2520640	58
3	9.7481230	9.9183103	9.82;8047	10.1701953	10.0816817	10.2518770	57
4	9.7483099	9.9182329		10.1799231	10.0817671	10.2516901	56
5	9.7484967	9.9181475	9-8303492	10.1696508		10.2515033	-
6	9-7486833	9.9180620	9.8306213	10.1693787		10.2513167	
-	9.7488699	9.9179764		10.1691066	10.0820236	10.2511302	53
8	9.7490562	9.9178908	9.8311654	10.1688346	10.0821092	10.2509438	52
9	9-7492425	9.9178051	9.8314374	10.1685626	10.0821946	10.2507575	51
10	9-7494287	9-9177194		10.1682907		10.2505713	-
11	9.7496148	9.9176336		10.1680189	10.0823664	10.2503852	49
12	9-7498007	9.9175478	9.8322529	10.1677471	10.0824522	10.2501993	48
13	9.7499866	9.9174619		10.1674754	10.0825381	10,2500134	47
14	9.7501723	9.9173760	9.8327963	10.1672037		10.2498277	
15	9.7503579	9.9172900		10 1669321		10.2496421	-
		9.9172040		10.1656606	10.0827950	10.2494566	44
		9.9171179		10.1663891		10.2492713	
		9.9170317		10.1661177		10.2490860	
		9.9169455		10.1658464		10.2489009	
		9.9168593		10.1655171		10.2487158	-
21	9.7514591	9.9167730	9.8346961	10 1653039		10.2485309	
				10.1650327		10.2483462	100
				10.1647616		10.2481615	3
		9.9165137		10.1644906		10.2479769	1
-		9.9164272		10-1642195		10.2477925	-
		9.9163406		10.1639487	10.0835594	10.2476081	34
		9.9162539		10.1636779	10.0837461	10.2474239	3
28	9.752760	9.9161673		10.1634071		10.2472398	
29	9.752944	9.9160805		10.1631364		10.2470558	
150	9.753128	9-9139937	9.0371342	10-1628657	10.0840003	10.2468720	12
		Sine		Tang.		Secant.	M

M	Sine.		Tang.		Secant,		
20	9.7531280	9.9159937	9.8371343	10.1628657	10.0840063	10.2468720	30
		9.9159069	9.8374049	10.1625951	10.0840931	10.2466882	25
22	0.7534954	9.9158200	9.8376755	10.1623245		10.2465046	
22	9.7535790	9.91 57330	9.8379460	10.1620540		10.2463210	
24	9.7538624	9-9156460		10.1617836		10.2461376	
35	9.7540457	9.9155589	9.8384867	10-1615133	10.0844411	10-2459543	2
26	9.7542288	9.9154718	9.8387571	10.1612429	10.0845282	10.2457712	24
27	9 7544119	9.9153846		10.1609727	10.0846154	10.2455881	2
28	9.7545949	9.9152974		10-1607025	10.0846026	10.2454051	2:
20	9.7547777	9.9152101		10.1604324		10.2452223	
40	9.7549604	9.9151228	9.8398377	10.1601623	10.0848772	10.2450396	20
41	9.7551431	9.9150354	9.8401077	10.1598923	10.0849646	10.2448569	1
42	9.7553256	9.9149479		10.1596224	10 0850521	10.2446744	1
12	9.7555080	9.9148604	9.8406475	10.1593525	10.0851396	10,2444920	1
14	9.7556902	9.9147729		10.1590826		10.2443098	
45	9.7558724	9.9146852	9.8411871	10.1588129	10.0853148	10.2441276	1
		9.9145976	9 8414569	10.1585431	10.08 4024	10.2439455	1.
47	9.7562364	9.9145099		10.1582735		10.2437636	
18	9.7564182	9.9144221		10.1580039	10.0855779	10.2435818	1
40	9.7565999	9.9143342	9.8422657	10.1577343	10.0856658	10.2434001	1
50	9.7567815	9-9142464	9.8425351	10.1574649	10.0857536	10.2432185	1
ST.	9.7 569630	9-9141584	9.8428046	10.1571954	10.0858416	10.2430370	
42	9-7571444	9,9140704	9.8430739	10.1569261	10.0859296	10.2428556	
63	9.7573250	9-913 9824	9.8433432	10.1566568	10.0860176	10.2426744	
4	9.7575068	9.9138943	9.8436129	00.1563875	10.0861057	10.2424932	E
55	9-7576878	9-9138061	9.8438817	10.1561183	10.0861939	10.2423122	1
56	9.7578687	9.9137179	9.8441508	10.1558492	10.0862821	10.2421313	T
57	9.7580495	9.9136296	9.8444199	10-1555801	10.0863704	10.2419505	
58	9.7582302	9.9135413	9.844688	10.1553111	10.0864587	10.2417698	1
59	9.758410	9.9134530	9.8449579	10.1550421	10.0865471	10.2415892	1
60	9.758591	9.9133645	9.8452268	10.1547732	10.0866355	10.2414087	1
	1	Sine.		1		Secant.	N

M	Sine		Tang.		Secant.		
0	9.7585913	9.9133645	9.8452268	10.1547732.	10.0866355	10.2414087	50
-	9.7587717		9.8454956	10.1645044	10.0867240	10.2412283	59
		9.9131875		10.1542356	10.0868125	10.2410481	58
3	9.7591321	3.9130989		10.1539668	10.0869011	10.2408679	57
		9.9130102		10.1535982	10.0809898	10.2406879	56
5	9.7594920	9.9129215	9.8465705	10.1534295		10.2405080	-
6	9.7596718	9.9128328	9.8468390	10.1531610	10.0871672	10.2403282	54
		9.9127440	9.8471075	10.1528925	10.0872560	10.2401485	53
8	9.7600314	9.9126551		10.7526240	10.0873449	10.2399689	52
		9.9125662		10.1523556	10.0874338	10.2397894	51
10	9.7603899	9.9124772	9.8479127	10.1520873		10.2396601	_
11	9.760569:	9.9123882	9.8481810	10.1518190	10.0876118	10.2394308	49
12	9.7607483	9.9122991	9.8484492	10.1515508	10.0877009	10.2392517	48
13	9.7609274	9.9122099		10.1512826		10.2390726	
14	9.7611063	9.9121207		10.1510145	10.0878793	10.2388937	46
15	9.7612851	9-9120315	9.8492536	10 1507464		10.2387149	*Street,
16	9.7614638	9.9119422	9.8495216	10.1504784	10.0880578	10.2381362	44
		9-9118528		10.1502104	10.0881472	10.2383576	43
1.8	9.7618208	9.9117634		10.1499425	10.0882366	10.2381792	42
19	9.7619992	9.9116739		10.1496747	10.0883261	10.2380008	41
2.0	9.7621775	9.9115844	9.8505931	10.1494069	10.0884156	10.2378225	40
21	9.7623556	9.9114948	9.8508608	10.1491392		10.2376444	
	9.7625337			10.1488715		10.2374663	
23	9.7627116	9.9113155		10.1486039	10.0886845	10.2372884	37
		9.9112257		10.1483353	10.0887743	10.2371106	30
2.5	9.7630571	9.9111359	9.8519312	10.1480688		10.2369329	-
26	9.7632447	9.9110460		10.1478013		10.2367553	
27	9.7634222	9.9109561	9.8524661	10.1475339		10.2365778	
		9.9108661		10.1472665		10.2364004	
25	9.7637769	9.9107761		10.1469992	10.0892239	10.2362231	3
34	9 763954	9,9106860	9.8532080	10.1467320	10.0893140	10.2360460	30
1		Sine		Tang.	1	Secant.	M

M	Sine.		Tang.		Secant.		
30	9.7639540	9.9106860	9.8532580	10.1467320	10.0893140	10.23:0460	30
_		9.9105959	9.8535352	10.1464648		10.2358589	
12	9.7643080	9.9105057	9.8538023	10.1461977	10.0394943	10.2355920	28
33	7.7644849	9.9104155	9.8540694	10.1459306	10.0895846	10,2355151	27
24	9.7646616	9.9103251	3.8543365	10.1456635	10.0896749	10-2353384	20
35	9.7648382	9.9102348	9.8546034	10.1453956	10.0897052	10.2351618	25
35	9.7650147	9.9101444	9.8548704	10.1451296		10.2349853	
37	9.7651911	9.7100539	9.8551372	10.1448626		10.2348089	
38	9.7653674	9.9099633	9.8554041	10.1445959		10.2346326	
39	9.7655436	9.9098728	9.8556708	10.1443292		10.2344564	
40	9-7657097	9.9097821	9.8559376	10.1440624	10.0902179	10.2342803	20
41	9.7658957	9.9096915	9.8562042	10.1437958	10.0903085	10.2341040	15
42	9.7660715	9.9006007	9.8 564708	10.1435292		10.2339285	
43	9.7662473	9.9095099	9.8567374	10.1432626		10:2337527	17
44	9.7664229	9.9044190	9.8570039	10.1429951	10.0905810	10.2335771	16
45	9.7665985	9.9093281	9.8572704	10.1427296	1	10.2334015	15
46	9.7667739	9.9092371	9.8575358	10.1424632	10.0907629		14
47	9.7669492	9.9091461	9:8578031	10.1421969	10.0908539	10.2330508	13
48	9.7671244	9.9090550	9.8580694	10.1419306	10.0909450	10.2328756	12
49	9.7672996	9.9086639	9.8583357	10,1416643	10.09:0301	10.2327004	11
50	9.7674740	9.9088327	9.8586019	10-1413981		10.2325254	10
		9.9087814	The second second	ro.1411320	10.0912186	10.2323506	9
52	9.7678242	9.9086901	9.8591341	10.1408659		10.2321758	-8
53	9.7679989	9.9085988		10.1405998		10.2320011	7
54	9.7681735	9.9085073	The second secon	10.1403339	10.0914927	10.2318265	6
-		9.9084159		10-140,0679		10.2316520	5
		9.9083243		10.1398020	10.0916757	10.2314777	.4
57	9.7686966	9.9082327		10.1395362	10.0917673	19.2313034	3
58	9.7688707	9.9081411		10.1392704	10.0918589	10.2311293	2
59	9.7090440	9.9080494		10.1390046	10.0919500	10.2309552	,
00	9. 7092167	9.9079576	9.8012010	10.1387390	10,0920424	10.2307813	0
		Sine.	13. 34	Tang.		Secant.	M

M	Sine,	1	Tang.		Secant.		
0	9.7692187	9-9079576	9.8612610	10.1387390	10.0920424	10.2307813	60
1	9.7693925	9.9078558	9.861 5267	10.1384733	10.0921342	10.2306075	55
	9.7695662	9.9077740		10.1382077		10.2304338	
3	9.7697398	9.9076820		10.1379422		10.2302602	
4	9.7699134	9.9075501		10.1376767		10.2300866	
5	9.7700868	9.9074580	9.8625887	10.1374113	10.0925020	10-2299132	5
6	9.7702601	9.9074055		10.1371459	10.0925941	10.2297399	5.
7	7.7704332	9.9073138		10.1368805		10.2295668	
+		9.9072216		10.1366152		10.2293937	
5		9.9071293		10.1363500		10-2292207	
10	9.7709522	9.9070370	9.8639152	10.1360848	10.0929630	10.2290478	5
13	9.77 11249	9.9069446		10.1358197	10.0930554	10.2288751	4
12	9.7712976	9.9068522		10.1355546		10.2287024	
		9.9067597		10.1352895		10.2285298	
	9-7716426			10.1350245	10.0933329		
15	9.77 18150	9.9065745	9.8652404	10.1347590	10.0934255	10.2281850	4
16	9-7719872	9.9064815	9.8655053	10.1344947	10.0935181	10.2280128	4
17	9-7721593	9.9063892	9.8657702	10.1342298	10.0936108	10.2278407	4
18	9-7723314	9.9062964	9.8666350	10.1339650	10.0937036	10.2276686	4
		9.9062036		10.1337003		10.2274963	
20	9.7726751	9.9061107	9.8665644	10.1334356	10.0938893	10.2273249	4
21	9.7728468	9.9060177	9.8668291	101331709	10.0939823	10.2271532	3
2	9-773018	9.9059247	9.8670937	10.1329063	10.0940753		
2	9.7731900	9.9058317		10.1326417	10.0941683	10 2268100	3
24	9.773361	9.9057386	9.8676228	10.1323772	10.0942614		
2	9-773532	9.9056454	9.86788.73	10.1321127	10.0943546	10.226467	3 3
20	9.773703	9.9055522	9.8681517	10.1318483	10.0944478	10.2262921	13
		9.9054589	9.8684160	10.1315840	10.0945411	10.2261251	13
		9.9053656		10.1313196		10.2259541	
		9.9052722		10.1310554	10.0947278	10.2257832	3
3	9-774387	9.9051787	9.8692089	10.1307911	10.0948213	10.2256124	3
		Sine.	17. 3	Tang.		Secant.	N

M	Sine.		Tang.		Secant.		1
30	9.7743876	9.9051787	9.8692089	10,1307921	10.0948413	10.2255124	30
		9.9050852	9.8594731	10.1305269		10.2254417	
22	9.7747288	9.9049916		10.1302628	The state of the s	10.2253712	
33	7.7748993	9.9048980		10.1299987		10.2251007	
24	9.7750097	9.9048043		10.1297347		10.2249303	
35	9-7752399	9.9047106	9.8705693	10.1294707	10.0952894	10.2247601	25
		9.9046168	10	10.1292067		10.2245899	
		9.9045230	9.8710572	10.1289428		10.2244199	
0.01		9.9044291	9.8713210	10.1286790		10.2242499	
39	9.7759199	9.9043351	9.8715848	10.1284152		10.2240801	
-		9.9042411		10-1281514		10.2239103	-
		9.9041470		10.1278837	10.0958530	10,2237407	15
		9.9040529		10.1276240		10.2235711	
		9.9039587		10.1273604		10.2234017	
44	9-7767076	9.9038644		10.1270968		10.2232324	
_		9.9037701		10-1268332		16.2230531	
		9.9036757		10.1265698		10.2228940	
47	9-7772750	19.9035813		10,1263063	10.0964187	10,2227250	13
48	9.7774439	9.9034868		10.1260429		10.2225561	
		9-9033923		10-12577.96		10.223872	
-		9-9032977		10-1255162		1 .7222185	-
		9.9032031		10.1252530		10.2220499	
		9.9031084		10.1249898	10.0968916		
		9.9030136		10.1247266	10.0969864		7
54	9.7784553	9.9029188		10.1244635	10.0970812		0
-	THE RESERVE TO THE PERSON NAMED IN	9.9028239		10.1242004	10 097 1761	Service and the service and th	-5
		9.9027289		10.1239373	10.0972711		4
		9.9026339		10.1236743	10.0973661		3
		9.9025389		10.1234114	10.0974611		2
		9.9024438		10-1231485	10.0975562		
_	3-1/94030		9.0//1:44	10.1228856	10.0976514	10.2205370	0
2.1		Sine.		Tang.	The way	Secant,	M

M	Sine.		Tang		Secant.		
0	9.7794630	9.9023486	9.8771144	10.1228856	10.0976514	10.2205370	60
1	9.7796500	9.9022534	9.8773772	10.1226228	10.0977466	10.2203694	59
2	9.7797981		9.8776400	10.1223600	10.0975419	10.2202019	58
3	9.7799655	9.9026628		10.1220973		10,2200345	
		9.9019674		10.1218346		10.2198672	
5	9.7803000	9.9018719	9.8784281	10.1215719	10.0981281	10.2197000	55
	7.7804571	9.9017764	9.8786507	10.1213093	10.0982236	10.2195329	54
7		9.9016808	9.8789535	10.1210467	10.0983192	10.2193659	53
8	9.780801c	2.9015852		10.1207842		10.2191990	
	9.7809677			10,1205218		10.2190323	
10	9.7811344	9.9013938	9.8797407	10.1202593	10.0986062	10.2188656	50
11	9.7813010	9.9012980	9.8800031	10.1199969	10.0987020	10.2186950	49
1.2	9.7814675	9.9012021	9.8802654	10.1197346		10.2185325	
13	9.7816339	0.9011062		10.1194723	10.0988938		
	9.7818002			10.1192100	10.0989898		
15	9.7819664	9.9009142	9.8810522	10.1189478	10.0996858	10.2180336	45
16	9.7821324	9.9008181	9.8813144	10.1186856	10.0991819	10.2178676	44
		9.9007219	9.8815765	10.1184235	10.0992781	10.2177016	43
18	9.7824643	9.9006257		10.1181614	10.0993743		
		9.9005294		10.1178993		10.2173659	
30	9.7827958	9.9004331	9.8823627	10.1176373	10.0945669	10.2172042	40
21	9.7829614	9.9003367	9.8826246	10.1173754	10.0996633	10.2170386	39
23	9.7831258	9.9002403	9.8828866	10,1171134		10.2168732	
23	9.7832922	9.9001438	9.8831484	10.1168516		10,2167078	
		9.9000472	9.8834103	10.1165857	10.0999528		
25	9.7836227	9.8999506	9.8836721	10.1163279	. 10.1000494	10.2163773	35
26	9.7837878	9.8998539	9.8829228	10.1160662	101001461	10.2162122	34
		9.8997572		10.1158044	10.1002428	10.2180472	33
		9.8996604		10.1155428	10.1003396	10.2158823	32
25	9.7842824	9.8995636		10.1152811		10.2157176	
30	9.7844471	9.8994667	9.8849809	10.1150195	10.1005333	10.2155529	39
-		Sine.		Tang.		Secant.	M

M	Sine.		Tang		Secant.		1
		9.8994667	9.8849805	10.1150195	10. 1005333	10.215552	3
11	9.7846117	9.8993697	9.8852420	10.1147580	10.1006303	10.215388	3 2
12	9.7847762	9.8992727		10.1144965		10.2152238	
13	9.7849406	9.8991756		10.1142350		10.2150594	
14	9.7851049	9.8990784		10.1139736		10.2148951	
		9.8989812		10.1137122		10.2147309	100
16	9.7854332	9.8988840		10.1134508	10.1011160		
17	9.7855972	9.8987867		10.1131895		10.2144028	
8	9.7057011	9.8986893	9.8870718	10.1129282	10.1013107		
9	0.7860886	9.8985919	9.8873330	10 1124058	10.1015056		
		9.8983968	9.8878554	10.1121446	10.1016032		4
I	0.7864149	9.8982992		10.1118835	10-1017008	10.213/4/8	
2	0.7864701	9.8982015	9.8883775	10.1116225	10.1017985	10.2124200	
Ä	0.7867424	9.8981038		10.1113614	10-1018962	10.2132576	1
7	9.7869056	9.8980060		10.1111004	10.1019940		
4	9.7870687	9.8979082	9.8891604	10.1108295	10.1020918		-
7	9.7872317	9.8978103	9.8894214	10.1105786	10.1021897	10.2127682	
8	9.7873946	9.8977123	9.8896823		10.1022877	10.2126054	1
0	9.7875574	9.8975143		10.1100568	10.1023857	10.2124426	1
0	9.7877202	9.8975162	9-8902040	10.1097960	10.1024838	10.2122798	1
I	9.7878828	9-8974181	9.8904647	10.1095353	10.1025819	10.2121172	
2	9.7880453	9.8973199		10.1092746	10.1026801		
3	9.7882077	9.8972216		10.1090139	10.1027784	10.2117923	1
4	9.7883701	9.8971233		10.1087532	10.1028767		
		9.8970249		10.1084926	10.1029751		Sec.
6	9.7886944	9.8969265		10.1082321	10.1030735	10.2113056	
7	9.7888505	9.8968280	A STATE OF THE STA	10.1079715	10.1031720	10.2111435	li.
8	9.7890184	9.8967294		10.1077110	10.1032706	10.2109816	
9	0.7802420	9.8956308		10.1074506	10.1033692	10,2108198	1
-	7-1093420		3.0920090		STREET, SQUARE, SQUARE,	S CONTRACTOR OF THE PARTY OF	-
		Sine.	1 40 2			Secant.	A

A Table of Artificial Sines,

38 Degrees.

M	Sine		Tang	*	Secant.		
-	9.7893420	9.8565321	9.8928098	10.1071902	10.1034579	10.2106580	60
1	9.7855030	2.8964334	9.8930702	10.1059298	10.1035666	10.2104964	59
				10.1056694	10.1036654	10.2103348	58
3	9.7898266	3.8962358	9.8935909	10.1054091	10.1037642	10.2101734	57
4	9.7899886	3.61365	9-8938511	10.1061489	10.1038031	10.2100120	56
	AND DESCRIPTION OF THE PERSON NAMED IN COLUMN 1	9-8960379	The second of the second	10.1058886		10.2098507	-
	9.7903104			10.1056285	10.1040611	10.2096896	54
	9.7904715			10.1053683	10-1041602	10.2095285	53
	9.7906325		A STATE OF THE PARTY OF THE PAR	10.1051082		10.2093675	
	9.7907533			10.1048481		10.2092067	
	9.7909541			10.1045881		10.2090459	-
	9.7911148			10.1043281		10.2088852	
	9,7912754			10.1040681		10.2087246	
	9.7914359			10.1038082		10.2085641	
	9.7915953			10 1032884		10.2084037	
-	9.7917556	-	5				-
	9.7919168			10.1030286		10.2080832	
	9.7920769			10.1027688		10.2079231	
	9.7922369		M. Carlotta, C. C. Carlotta, C. C. Carlotta,	10.1025090		10.2076631	
	9.7923968			10.1019896		10.2074434	
	-						
	9.7927163			10.1017300	10.1055537	10.2071240	39
	9-7928760			10.1012108		10.2069645	37
	9.7931949			10.1009513	10.1058538		36
	9.7933543			10.1006918		10.2056457	3
389				10.1004323		10.2064864	34
	9-7935727	9.8939458		10.1001729		10.2063273	
	9.7938317			10.0999135		10.206 1683	
	9.7939907			10.0996541		10.2060093	31
	9 9941796			10.0993948		10.2058504	30
		Sine		Tang.		Secant.	M

M	Sine.		Tang		Secant.		
_	9.7941496	9.8935444	9.9006952	10.0993948	10. 1064556	10.2058504	30
	9-7943083		9.9008645	10.0991355		10.2056917	
22	9.7944670	9.8933433	9.9011237	10.0988763	10.1066567	10.2055330	28
23	9.7946250	9.8932426	9.9013830	10.0986170		10.2053744	
34	9-7947841	9.8931419	9.9016422	10.0983578		10.2052159	
35	9-7949425	9.8930412	9.9019013	10.0980987	10.1069588	10.2050575	25
26	9.7951008	9.8929404	9-9021604	10.0978396	10.1070596	10.2048992	24
37	9.7952590	9.8928395	9.9024195	10.0975805		10.2047410	
38	9.7954171	9.8927385	9.9026786	10.0973214	10.1072615	10.2045829	22
39	9.7955751	9.8926375	9.9029376	10.0970624	10.1073525	10.2044249	21
40	9.7957330	9.8925365	9.9031966	10.0968034	10.1074635	10.2042670	20
-	9.7958909		9.9034555	10.0965445	10.1075646	10.2041091	I
12	9.7960486	9.8923242	9.9037144	10.0962856	10 1076658	10.2039514	18
12	9.7962062	9.8922229	9.9039733	10.0960267		10.2037938	
	9.7963638	9.8921216	9.9042321	10.0957679		10.2036362	
15	9.7965212	9.8920303	9.9044910	10.0955090	10.1079697	10.2034788	15
	9.7966786		9 9047497	10.0952503	10.10:0711	10.2033214	14
	9.7968359		9 9050085	10.0949915	10-1081725	10.2031641	14
	9.7969930		9.9052672	10.0947328	10.1082742	10.2030070	1
	9.7971501		9.9055259	10.0944741	10.1083758	10.2028499	11
50	9.7973071	9.8915226	9.9057845	10.0942155	10.1084774	10.2026929	10
	9.7974640		9.9060431	10.0939569	10.1085792	10.2025360	9
(2	9.7976208	9.8912191	9.9063017	10.0936983	10.1086809	10.2023792	- 8
62	9.7977775	9.8912172		10.0934397	10.1087828	10.202225	
54	9-7979341	9.8911153	9.9068188	10.0931812	10.1088847	10.2020659	6
55	9.7980906	9.8910133	9.9570773	10.0929227	10.1089867	10.2019094	
-	9.7982470		9.9073357	10.0926643		10.2017530	
57	9.7984034	9.8908092		10.0924059	10.1091908	10.2015966	
	9.7985596			10.0921475	10.1092929	10.2014404	
	9.7987158			10.0918891	10-1093951	10,2012842	
60	9.7988718	9.8905026		10.0916308	10.1094974	10.2011282	1
	V - 17	Sine.				Secant.	100

A Table of Artificial Sines,

39 Degrees.

M	Sine		Tang.		Secant.	Sec. 1	
0	9.7988718	9.8905026	9.9083692	10.0916308	10.1094974	10.2011282	60
1	9.7990278	9.8904003	9.9086275	10.0913725	10.1095997	10,2009722	59
2	9.7991835	9.8902979		10.0911142		10.2008164	
3	9.7993394	9.8901954	9.9091440	10.0908560		10.2006606	
4	9.7994951	9.8900929		10.0905978		10.2005049	
5	9.7996587	9.8899903	9.9096603	10.0903397	10.1100097	10.2003493	55
6	9.7998062	9.8898877	9.9099185	10.0900815	10.1101123	10.2001938	54
7	9.7999616	9.8897850		10.0898234	10.1102150	10.2000384	53
. 8	9.8001169	9.8896822		10.0895653		10.1998831	
9	9.8002721	9.8895794		10.0893073		10,1997279	
10	9.8004272	9.8894765	9.9109507	10.0890493	10.1105235	10.1995728	50
11	9.8005823	9.8893736	9-9112087	10.0887913	10.1106264	10.1994177	49
		9.8892706		10.0885334		10.1992628	
		9.8891675	9.9117245	10.0882755		10.1991079	
		9.8890644	9-9119824	10.0880176		10.1989532	
		9.8889612	9.9122403	10 0877597	10.1110388	10.1987985	45
16	0.8012561	9.8888580	9.9124981	10.0875019	10.1111420	10.1986439	44
	9.8015106		9.9127559	10.0872441		10.1984894	
18	9.8016649	9.8886513		10.0869863		10.1983351	
		9.8885479		10.0867286		10.1981808	
		9.8884444	9.9135291	10.0864709		10-1980265	
		9.8883408	9.0127868	10 0862132	10.1116402	10.1978724	3
22	9.8022816	0.8882272	9.914044	10.0859556	10.1117628	10.1977184	3
		9.8881335	9.9143020	10.0856980	10.111866	10.1975645	3
		9.8880298		10.0854404	10.1119702	10.1974100	
		9.8879260		10.0851829		10.1972569	
-	9.802895		9.9150747	10.0849253	Name and Address of the Owner, where	10.1971032	-
		9.8877182		10.0846678	10.112281	10.1969496	3
		9.8876142		10.0844104	10.112284	10.196796	
		9.8875102		10.0841529		10.195642	
		9.8874051		10.0838955		10.196489	
F		Sine		Tang.		Secant.	1

M	Sine.		Tang.		Secant.		2.0
30	9.8035105	9.8874061	9.9161045	10.0838955	10.1125939	10.1964895	30
31	9.8036637	9.8873019	9.9163618	10.0896382	10.1126981	10.1963363	29
12	9.8038158	9.8371977	9.9166192	10.0833808	10.1128023	10.1961832	28
22	9.8039699	9.8870934	9.9158765	10.0831235		10.1950301	
14	9.8041228	9.8869890	9.9171338			10.1958772	60a - 17
15	9.8042757	9.8868846	9.9173918	10.0826089	10.1131154	10.1957243	25
5	9.8044284	9.8867801	9.9176483	10.0823517		10.1955716	
17		9.8866756	9.9179055	10.0820945	10.1133244	10.1954189	23
8	9.8047336	9.8865710	9.9181627	10.0818373		10.1952664	
		9.8864663	9.9184198	10.0815802		10.1951139	
10	9.8050385	9.8863616	9.9186769		10.1236384	10.1949615	20
		9.8862558	9.9189340	10.0810660	10.1137432	10.1948092	15
2	9.8053430	9.8861519	1101010.0	10.0808089	10.1138481	10.1946570	I
3	9.8054951	9.8860470	9.9194481	10.0805519	10.1139530	10.1945049	1
4	9.8056472	9.8859420	19.9197051	10.0802-949		10.1943528	
5	9.8057991	9.8858370	9.9199621	10.0800379	10.1141630	10.1942008	H
6	9.8059510	9.8857319	9.9202191	10.0797809	10.1142681	10.1940490	14
7	9.8061027	9.8856267	9.9204760	10.0795240	10.1143733	10.1938973	1
8	9.8062544	9.8855215	9-9207329	10.0792671	10.1144785	10.1937456	1:
9	9.8064060	9.8854162	9.9209868	10.0790102		10.1935940	
0	9.8065575	9.8853109	9.9212466	10.0787534	10.1146891	10.1934425	K
1	9.8067089	9.8852055	9.9215034	10 0784966	10.1147945	10/1932914	
		9.8851000	9-9217602	10.0782398		10.1931398	
3	9.8070114	9.8849945	9-9220170	10.0779830		10.1929886	
4		9-8848889	9.9222737	10.0777263		10.1928374	
5	9.8073136	9.8847832	9.9225304	10.0774696	10 1152168	10.1926864	
6	9.8074545	9.8846775	9.9227871	10.0772129	10.1153225	10-1925354	-
		9.8845717	9.9230437	10.0769563		10.1933846	
8	9.8077662	9.8844659	9.9233004	44 4	10.1155341	10-1922338	1
9	9.8079169	9.8843599	9.9235570	10.0764430	10.1156401	10.1920831	
60	9.8080675	9.8842540	9.9238135	10.0761865	10.1157460	10-1919329	
		Sine.		Tang.		Secant.	-

M	Sine.		Tang		Secant.		
-	9.8080675	9.8842540	9-9238135	10.0761865	10.1157460	10.1919325	60
1	9.8082180			10.0759299	10.1158521	10.1917820	59
	9.8083684			10.0756734	10.1159582	10.1916316	58
2	9.8085188	9.8839357		10.0754169	10.1160643	10.1914812	57
4	9.8086690	9.8838294		10.0751604		10.1913310	
5	9.8088192	9.8837232	9.9250960	10.0749040	10.1162768	10.1911808	55
6	9.8089692	0.8836168	9.9253524	10.0746476	10.1163832	10.1910308	54
	9.8091192			10.0743912	10.1164896	10.1908808	5
	9.8092691			10.0741348	10,1165961	10.1907309	52
	9.8094189			10.0738785		10.1905811	
	9.8095686		9.9263778	10.0736222	10.1168092	10.1904314	50
11	9.8097182	9.0820841	9-9266341	10.0733659	10.1169159	10.1902818	45
	9.8098678			10.0731096	10.1170226	10.1901322	48
	9.8100172		9.9271466	10.0728534	10.1171294	10.1899828	4
	9.8101666			10.0725972		10.1898334	
	9.8103159		9.9276590	10.0723410	10.1173432	10.1896841	4
16	9.8104650	0.8825400	0.9279162	10.0720848	10.1174501	10.1895350	44
	9.8106141			10.0718287		10.1893859	
	9-8107631			10.0715726		10.1892369	
	9.8109121		9-4286835	10.0713165		10.1890879	
	9.8110609		9.9289396	10:0710604	10.1178787	10.1889391	4
21	9.8112096	0.8820140	0.0201056	10.0708644	10.1179860	10.1887904	13
	9.8113583		9.9294516	10.0705484		10.1886417	
	9.8115069		9.9297076	10.0702924	10-1182008	10.1884931	3
	9.811654		9.9299636	10.0700364	10-1183082		3
	9.8118038		9.9302195	10.0697805	10.1184158	10.1881962	3
2	9.8119521	9.8814766	9-9304765	10.0695245	101185234	10.1880479	3
	7 9.8121003		9.9307214	10.0692686	10.1186311	10.1878997	3
2	8 9.8122484	9.8812612		10.0690128	10.1187388	10.1877516	3
	9.812396	9.8811534	9.9312431	10.0687569	10.1188466	10.1876035	3
3	0 9.8125444	9.8810455	9.9314989	10.0685011	10.1189545	10-1874556	3
25. 19.		Sine.		Tang.		Secant.	N

M	Sine.		Tang.	1	Secant.		1
10	9.8125444	9.8810455	9.9314989	10.0685011	10,1189545	10.1874556	30
21	9.8126923	9.8809376	9-9317547	10.0682453		10.1873077	
• •	0.8128401	9.8308296	9.9320105	10.0579895		10.1871599	
22	19.8129878	9.8807215	9.9322662	10.0677338		10.1870122	
24	19.8131354	9.8800134	9.9325220	10.0574780		10.1868646	
35	9.8132819	9.8805052	9.9327770	10.0572223		10.1857171	-
25	0.8121303	9.8803970	9.9330334	10.0669666		10.1855697	
27	9.8135777	9.8802887	9.9332890	10.0667110		10.1864223	
28	9.8137250	9.8801803	9.9335446	10.0664554		10.1862750	
39	9.8138721	9.8800719	9-9338003	10.0661997		10.1861279	
		9.8799534	9.9340559	10.0659441		10.1859808	-
41	9.8141662	9.8798548	9.9343114	10.0556886		10.1858338	
42	9.8143131	9.8797462	9.9345670	10.0654330		10.18 56869	
43	9.8144600	9.8796375	9.9348225	10.0551775		10.1855400	
44	9.8146067	9.8795287	9.9350780	10.0649220		10.1853933	
45		9.8794199	9.9353335	10.0646665			-
	9.8148999		9.9355889	10.0644111		10.1851001	
	9.8150464		9.9358444	10.0641556		10.1849536	
		9.8790930	9.9360998	10.0639002		10.1848072	
49	9.8153391	9.8789840	9.9363552	10.0636448		10.1846609	
50		9.8788748	9.9356105				
51		9.8787656	9.9368659			10.1843685	1
52	9.8157770	9.8786563	9-9371212	10.0628788		10.1842224	
		9.8785470		10.0626235		10.1840765	
		9.8784376	9.93/0318	10.0623682		10.1837848	
-							-
1		9.8782186		10.0618577		10.1836391	
57		9.8781090		10.0616025	10.1210910	10.1834934	
		9.8778896		10.0610921		10.1832025	
		9.8777799		10.0508369		10.1830571	
-	74-	Sine.	7,3,1-3,	Tang.		Secant.	N

M	Sine.	1	Tang.		Secant.		
0	9.8169429	9.8777799	9.9391630	10.0608369	10-1222201	10.1830571	60
1	9.8170882	9.8776760	9.9394182	10.0605818	10.1223300	10.1829118	55
2	9.8172334	9.8775601		10.0603267	10.1224399	10.1827666	
3	9.8173785	9.8774501	9.9399284	10.0600716		10.1826215	
4	9.8175235	9.8773401		10.0598165	10.1226599		
5	9.8176685	9.8772300	9.9404385	10.0595615	10.1227700	10.1823315	55
e	9.8178133	9.8771198	9.9406936	10.0593064	10.1228802	10.1821867	54
-	9.8179581			10.0590514	10.1229904		
	9.8181028		9.9412036	10.0587964	10,1231007	10.1818972	52
5	9.8182474	9.8767889		10.0585415	10.1232111		
10	9.8183919	9.8766785	9-9417135	10.0582865	10.1233215	10.1816081	50
11	9.8185364	9.9764680	9.9419684	10.0580316	10.1234320	10.1814636	49
	9.8186807			10.0577767	10.1235426	10.1813193	48
	9.8188250		9.9424782	10.0575218	10.1236532	10.1811750	47
	9.8189692		9.9427331	10.0572669		10.1810308	
	9.8191133		9.9429879	10.0570121	10.1238747	10.1808867	45
16	9.8192573	0.8760145	9.9432428	10.0567527	10.1239856	10.1807427	44
	9.8194012			10.0565024		10.1805988	
	9.8195450		9-9437524	10.05-2470	10.1242073	10.1804550	42
	9.8196888			10.0559928		10.1803112	
	9.8198325		9.9442619	10.0557381	10.1244294	10.1801675	40
21	9.8199761	0.8764 504	0.0445166	10.0554834	10.1245406	10.1800 239	20
	9.8201196			10.0552286	10.1246518		000
	9.8202630			10.0549739	10.1247631		
	9.8204063			10.0547193	10-1248744		30
	9.8205496			10.0544646	10.1249858		
-	9.8206927			10.0542100	10.1250072	10.1793073	-
	9.8208358			10.0539553		10.1791642	
	9.8209788		9.9462993	10.0537007		10.1790212	
	9.8211217			10.053446		10.1788783	
30	9.8212646	9.8744561		10.0531916		10.1787354	
1000		Sine.		Tang.		Secant.	1

			š.A.	1.0	. 1	1
sine.		Tang.		Secanc.		1
0 9.8212646	9.8744561	9.9468084	10.0531916	10.1255439	10-1787354	3
1 9.8214073		9.9470630	10.0529370	10.1256557	10.1785927	12
2 9.8215500	9.8742,25	9.9473175		10.1257665	10.1784500	12
2 9.8216926	9.0741205	9.9475720	10.0524280	10.1248795	110.1783074	. 2
49.8218351	9.07400851	9.9478265	10.0521735	10.1259915	10.1781049	12
5 9.8219775	9.8738965	9.9480810	10.0519190		10.1780225	-
69.8221198	9.8737844	9.9483355	10.0516645		10.1778802	
7 9.8222621	9.8736722	9.9485899	10.0514101		10.1777379	
8 9.8224042	9.8735599	9.9488443	10.0511557		10.1775958	
0 9.8225463	9.8734476	9.9490987	10.0509013		10.1774537	
0 9.8226883	9.8733352	9-9493531	10.050646		10.1773117	1-
1 9.8228302	9.8732227		10.0503925		10.1771698	
2 9.8229721	9.8731102		10.0501381		10.1770279	
3 9.8231138	9.8729976		10.0498838		10.1768862	
4 9.8232555	9.8728849		10.0496295		10.1767445	
9.8233971	9.8727722	9.9506248	10.0493752		10.1766029	-
6 9.8235386	9.8726594		10.0458497		10.1764614	
7 9.8236800	9-8725466		10.0485955	10.1274534	10.1763200	L
8 9.8238213	9-8724337		10.0483413		10.1761787	
9 9.8239626	9-3723207		10.0480872		10.1760374	
0 9.8241037		9.9518961	10.0488330		10.1758963	-
1 9.8242448	9.8720945	9.9521503	10.0478497	10.1279055	10.1757552	1
2 9.8243858	9.8719813		10.0475955		10.1756142	
3 9.8245267	9.8718681		10.0473413	10.1281319	10.1754733	
4 9.8246676	9.8717548		10.0470872	10.1282452	10.1753324	1
9.8248083			10.0468330		10.1751917	-
6 9.8249490	9.8715279		10.0465789		10.1750510	
7 9.82 508 96	9.8714144		10.0463248	10.1285850	10.1749104	1
8 9.8252301	9.8713008		10.0460707	10,1200992	10.1747699	1
9 9.8253705	9.8711872		10.0458166	10.1266128	10.17 6295	1
0 9.8255109		9.9544374	10.0555626	10.1260765	10.1744891	-
	Sine.	1		3.5	Secant.	IA

M	Sine	1	Tang		Secant.	:1	
0	9.8255109	9.8710735	9-9544374	10.0455626	10.1289265	10.1744891	60
		9.8709597		10.0453085	10.1290403	10.1743488	59
		9.8708458		10.0450545	10.1291542	10.1742087	58
		9.8707319		10.0448005	10.1292681		57
4	9.8200715	9.8706179		10.0445465			56
-		9-8705039		10.0442925		10.1737886	55
		9.8703898		10.:440385		10.1736488	54
		9.8702756		10.0437846	10.1297244	10.1735090	53
		9.8701613		10.0435307	10.1298387	10-1733693	52
		9.8700470		10.0432367	10.1299530	10.1732297	51
	1						-
		9.8698182		10.0427689		10.1729507	
		9.8697037	The state of the s	10 0425159		10.1728113	
		9.8695891		0 10.0422611		10.1726721	
		9.8694744		7 10.0420073 5 10.0417535		10.1725329	
	1	9.8693597				-	-
16	9-827745	9.8692449	9.958500	410.0414996		10.1722547	
	9.627884	9.8691301		0 10.0412458	10.130009	B 10.1721157	
		9.8689002		8 10.0407382		8 10-17:8381	
		6 9.8687851	0.040414	5 10.0404845	10.121214	9 10.1716994	
-	_	-					-
		3 9.8686700 8 9.8685548		3 10.0402307		0 10.1715607	
	9.0205//	3 9.8684396	9.95002	7 10.0397233		4 10,17 1283	
		79.8683242		5 10.039469		8 10.171145	2 2
		09.8682088	The second second	2 10.0392158		2 10.17 1007	
-				8 10.038962		6 10.170868	-
		49.8680934		5 10.038708		1 10.170730	
		5 9.8678623		2 10.0384548		7 10.170592	
		4 9.8677466		8 10.038201		4 10.170454	
		3 9.8676309	The second second second	5 10.037947		1 10.170316	
-		Sine		Tang.		Secant	13

M Sine.		Tang.		Secant.		
109.8296833	9.8676309	9.9620525	10.0379475	10.1323691	10.1703167	30
1 9.829 8212	9.8675151	9.9623061	10.0376939	10.1324849	10.1701788	29
29.8299589	9.8673992	9.9625597	10.0374403	10-1326008	10.1700411	28
23 9.8300966	9.8672833!	9.9628133	10.0371867		10.1699034	
49.8302342	9.8671673	9-96 30669	10.0369331	10.1328327	10.1697658	26
35 9.8303717	9.8670512	9-9633204	10.0366796	10.1329488	10.1696283	25
36 9.8305091		9.9635740	10,0364260	10.1330649	10.1694909	24
9.8306464	9.8668189	9.9638275	10.0361725		10.1693536	
8 9.8307837	9.8667026	9.9640811	10.0359189	10.1332974	10.1692163	22
9 9.8309209	9.8653863	9.9643346	10.0356654	10.1334137	10.1690791	21
109.8310580	9.8664699	9.9645881	10.0354119	10.1335301	10.1689420	20
9.8311950		9.9648416	10.0351584	10.1226466	10.1688050	I
2 9.8313320	9.8662259	9.9650951	10.0349049		10.1686680	
9.8314688	9.8561203	9.9653486	10.0346514		10,1685312	
9.8316056	9.8660036	9.9656020			10.1683944	
15 9.8317423	9.8558868	9.9658555	10.0341445	10.1341132	10.1682577	1
16 9.8318789		9.9661089	10.0338011		10,1681211	-
7 9.8320155	0.8646421	9.9663623	10.0336377		10.1679845	
89.8321519	9.8628262	9.9666157			10.1678481	
19 9.8322883	9.8644102	9 9668692	10.0331308		10.1677117	
9.8324246	9.8653021	9.9671225	10.0328775		10.1675754	
9.8325609		9.9673759		7	10.1674391	-
2 9.8 326 970	0.8640679		10.0323707		10.1673030	
9.8328331	0.8649504	9.9678827			10.1671669	
4 9.8329691	0.8648221	4.6	10.0318640		10.1670309	
5 9.8331050	9.8647156	9.9683893	1		10.1668950	
56 9.8332408			10.0313573			-
57 9 8333766	9.8644806		10.0311040		10.1667592	
58 9.8335122	0.8642620		10.0308507		10.1664878	
59 3.8336478	0.8642452		10.0305974		10.1002522	
50 9.8337833	0.8641274		10.0303441		10.1662 167	
2033/233	Sine.	7,7,0,33	1		Secant,	

A Table of Artificial Sines,

43 Degrees.

1	Sine.		Tang.		Secant.		1
0	9.8337833	.8641275	9.9695559	10.0303441	10.1358725	10.1662167	60
	9.8339188			10.0300909	10.1359904		
	9.8340541			10.0278376	10.1361083	10.1559459	5
3	9.83418,4	9.8637737		10.0295843	10.1362263	10.1658106	57
	9.8343246			10.0293311	10.1363443	10.1656754	50
	9.8344597			10.0290775	10.1364624		-
	9.8345948			10.0288246	10.1365806	10.1654052	54
	9.8347297			10.0285714	10.1366989	10.1652703	5
	9.8348646		The second second second second second	10.0283182	10.1368172		
	9.8349994			10.0280650	10.1369356		
257	9.8351341	9.8129450	9.9721882	10.0278118	10.1370540	10.1648659	50
	9.8452688			10.0275587	10.1371720		
	9.8354033		9 9726945	10.0273055	10.1372912		
	9.8355378			10.0270523	10.1374098		
	9.8356722			10.0267992	10.1375286		
3	9.8358065	9.8623526	9-9734539	10.0265461	10.1376474	10.1641934	4
6	9.8359408	9.8622338	19.9737071	10.0262929	10.1377662		
7	9.8360750	9.8621148	9.9739602	10.0250398	10.1378852		
8	9.8362091.	9.8619958	9-9742133	10.0257867	10.1380042		
9	9.8353431	9.8618767		10.0255335	10.1381233		
10	9.8364771	9.8617576	9-9747199	10.0252805	10.1382424	10 1035229	1
21	9.8366109	9.8516383	9-9749726	10.0250274		10.1633891	
12	9.8367447	9.8615190		10.0247743	10.1384810	10.1632553	13
	9.8368784			10.0245213		10.1631216	
	9 8370121			10.0242682	10.1387197		
2.5	9.8371455	9.8611608	9.9759849	10.0240151		10.1628544	10
26	9.8372791	9.8810412		10.0237621	10.1389588	10.1627269	3
	9.8374125			10.0235091	10.1390785	10.1625875	
	9.8375458		9.9767440	10.0232560	10.1391982		
	9.8376790			10.0230030	10.1393179		
30	9.8378122	9.8605622	9-9772500	10.0227500	10.1394378	10.1621878	1/2
200		Sine.	1	Tang.		Secant	A

M	Sine.		Tang.		Secant.		-
30	9.8378122	9.8605622	9.9772500	10.0227500	10.1394378	10.162187	8.30
31	9.837945	9 8 504423	9-9775030	10.0224970	10.1395377	10,162054	7 20
		9.8503223	19.9777660	10.0222440	10.1396777		
33	9.8382112	9.8502022	9.9780090	10.0219910	10.1397978	10.151788	8 17
34	9.8383441	9.8500821	9.9782520	10.0217380	10.1399179	10.161655	9 26
			9-9783149	10.0214851	19.1400381	10.161523	1 25
35	9.8386096	9.8598416		10.0212321	10.1401584	10.161390	124
		9.8597213	9.9790209	10.0209791	10.1402787	10.161257	3 2 3
38	9.8388747	9.8596009		10.0207262	10.1403991	10.161125	3 2 2
		9.8594804		10.0204732	10.1405196	10.160992	3 21
-		9.8593599	7.9777797	10.0202203	10.1406401	10.150850	120
41	9.8392715	9.8592393	9.9800326	10.0199674	10.1407607	10.1607281	16
42	9.8394041	9.8591186		10.0197144	10.1408814	10.1605950	18
43	9.8395363	9.8589978		10.0194615	10.1410022	10.1604537	17
44	9.0390584	9.8588770		10.0192036	10.1411230	10.1603316	16
		9.8587561	9.9810443	100189557	10.1412439	10.1601996	13
10	9.8399323	9.8586351			10.1413649	10.1500577	14
17	9.8400642	9.8585141		10.0184499	10.1414859	10.1599348	13
18	9.0401959	9.8583929		10.0181970	10.1415071	10.1598041	12
19	0.84044	9.8 582718		10.0179441	10.1417282	10.1596724	13
		9.8581505		10.0176913	10.1418495		
1	9.0405908	9.8580292		10.0174384	10.1419708	10.1594092	9
2	0.84084	9.8579078		10.0171855	10.1420922	10.1592777	8
3	0.8400840	9.8577863		10.0169327	10.1422137	10.1591462	7
	0.8411169	9.8576848	9.9833202	10.0166798	10.1423352	10.1390150	,6
		-		10.0164270	10 1424568		5
0	8412474	9.8574215	9.9838259	10.0161741	10.1425785	19.1587526	4
7/2	8415005	9.8572958	9.9840787	10.0159213	10.1427002	10.1586214	1
0 0	.8416404	9.8571779	9.9843315	10.01 90085	10.1428221	10.1584905	2
90	.8417712	9.8569341	9.9845844	10.0154156	10.1429439	10.1583596	1
-1-		6.	9.0848372	10.0151028	10.1430559	10.1582287	0
1		Sine.		Tang.		Secant.	14

A Table of Artificial Sines,

44 Degrees,

M	Sine.		Tang.		Secant.	Υ.	
0	9.8417713	9.8569341	8.9848372	10.0151628	10.1430659	10-1582287	60
1	9.8419021	9.8568121	9.9850900	10.0149100	10.1431879		
		9.8566900	9.98 53428		10.1433100		
	9.8421634		9.9855956		10.1434322		
		9.8564455	9-9858484		10.1435545		
5	9.8424244	9.8563232	9.9861012	10.0138988	10.1436768	10.1575750	55
6	9.8425548	9.8552008	9.9863540	10,0136460	10.1437992	10.1574452	54
		9.8560784		10.0133932	10.1439216	10.1573149	153
		9.8559558		10.0131404	10.1440442	10.1571846	52
		9.8558332		10.0128877	10.1441668	10.1570544	51
•	9.8430757	9.8557106	9.9873651	10.0125349	10.1442894	10.1509243	50
1	9.8432057	9.8555878		10.0123821	10.1444122	10.1567943	
12	9.8433356	9.8554550		10.0121294	10.1445350	10.1566644	48
1	9.8434655	9.8553421		10.0118766	10.1446579	10.1565345	4
1	9.8435953	9.8552192		10.0116239	10-1447808	10.1564047	40
	9.8437250	9.8550961	9-9886289	10.0113711	10.1449039	10.1562750	4
1	9.8438547	9.8549730		10.0111184	10.1450270	10.1561453	
i	9.8439842	9.8548499	9.9891344	10.0108656	10.1451501	10.1550158	4
1	9.8441137	9.8 547266		10.0106129	10.1452734	10.1558803	4
		9.8546033	9.9896399	10.0103601	10.1453967	10.1557508	54
2	9.844372	9.8544799	9.9898926	10.0101074	10.1455200	10.1556275	1
2	19.844501	9.8543564	9-9901453	10.0098547	10.1456436	10.155498	
	2 9.84463 1	9.8542329	9.9903981	10.0096019	10.1457671	10.1553690	03
		19.8541093		10.0053492	10.1458907	10.155239	9 3
2	49.844889	1 9.8539856	9.9909035	10.0090965	10.1460144	10.155110	9 3
2	59.845018	1 9.8538619	9.9911562	10.0088438	10.1461381	10,154981	9 3
2	69.845147	09.8537381	9.9914089	10.0085911	10.1462619	10.154853	03
2	79.845275	8 9.8 536 142	9.9916616	10.0083384		10.154724	
		\$ 9.8534902		10.0080857		10.154595	
2	9 9.845533	2 9.8533662		10.0078330	10.146633	10.154466	83
3	09.845661	8 9.8532421	9.9924197	10.0075803	10.146757	10.154338	2
- Switz	1	Sine.		Tang.		Secant.	1

1	Sine.		Tang.		Secant.		
_ 0		9.8532421	9.9924197	10.0075803	10.1467579	10.1543382	30
		9.8531179	9.9926724	10.0073276	10.1468821	10.1542097	29
2	0.8459188	9.8529936	9.9929251	10.0070749		10.1540812	
	9.8460471	9.8528693	9.9931778	10.0068222		10.1539529	
	9.8451754	9.8527449	9.9934305	10.0065695		10-1538240	
\$	9.8463035	9.8526204	9.9936832	10.0063168	19.1473796	10.1536964	2
5	9.8454318	9.8524959	9.9939359	10.0060641	10.1475041	10.1535682	24
		9.8523713	9.9941886	10.0058114		10.1534401	
8	9.8466879	8.8522466	9.9944413	10.0055587		10.1533121	
		8.8521218	9.9946940	10.0053060		10.1531842	
0	9.8469436	9.8519970	9.9949466	10.0050534	10.1480030	10.1530564	20
1	9.8470714	9.8518721	9.9951993	10.0048007		10.1 529286	
2	9.8471991	9.8517471	9-9954520	10,0045480		10.1528009	
		9.8516220	9-9957047	10.042953		10.1526733	
		9.8514969		10.0040427		10.1525457	
15	9.8475817	9.8513717		10.0037900		10.1524183	. 6
16	9.8477091	9.8512465	9.9964627	10.0035373	10.1487535	10.1522909	I
		9.8511211	9.9967154	10.0032846		10.1521635	
		9.8509957		10.0030320		10.1520363	
		9.8 508 702		10.0027793	The second secon	10.1519091	
_		9.8507446		10.0025266		10.1517820	1
		9.8506190		10:0022740	10.1493810	10.1516550	1
		0 9 8 504 9 3 3		10.0020213	10. 1495007	10.1515280	
		9 9.8 503675		10.0017586	10.1490329	10.1514011	
-	1.0.00	7 9.8502417		10.0015160	10.1497503	10.1512743	
55		4 9.8501157	1	10.0012633		10.1511476	100
		1 9.8499897		10.0010107	10.1500163	10.1510209	1
		7 9.8498637		10.0007580		10.1508943	
		2 9.8497375	1	10.0005053	10.1502025	10.1507678	1
59	9.049358	6 9.8496113		10.0002527		10.1506414	
-	9.049485	09.8494850	10.0000000	10.0000000	10.1505150	10-1505150	-
		Sine.		Tang.		Secant.	I

A Table of the Angles, which every Rhomb (or Point of the Compass) maketh with the Meridian.

NORTH.	SOUTH.	Points.	D.	М.	NORTH.	SOUTH.
		4	02	49		
Markey to		3	08	37		
North by Fast	South by Baft		11	26 15	N. ly to.	S. by W.
	100	-1	14	. 04		Sely VV.
		1 4	16	52		
		1 3	19	41		
N. N. E.	S. S. E.	2	22	30	N. N. W.	S. S. W.
11.151.1-21.01		2 4	25	1.9		
		2 =	23	07		2
N. E. by N.	0 7-0	2 4	30	56		
N. E. U. 14.	S. E. b. S.	3	33	45	N. W. by N.	S.W. by S.
	THE PARTY OF	3 4	36	34		
Contract to	A TOTAL	3 2	39	22.	14.5	
North-Eaft	Sourb-Eaft	3 7	42	11		
	gez.v-zarje	14	45	00	North-West,	South-West.
		4 1	47	49		
The second of		4 3	50 43	37 26		
N. E. by E.	S. E. by E.	4 3	56	15	N.W. by W.	S. W. by W.
	San Paris	5 4	59	04		3. 14. 0) 11.
		5 1/2	61	52	Charles Ca	
	THE PARTY OF THE P	5 4	64	42		
E.N. E.	E. S. E.	6	67	30	W. N.W.	W.S.W.
	1.74	6 1	70	19		
	200	6 =	73	07		
		6 3	75	56		
East by North	East by South	7	78	45	W. by N.	W. by S.
		7 4	18	34	A	20
		7 \$	84	22		and the same
Eeft.	Eaft.	7 4	87	11		
	- Lap.	7.0	90	- 00	West.	Weft.

FINIS.